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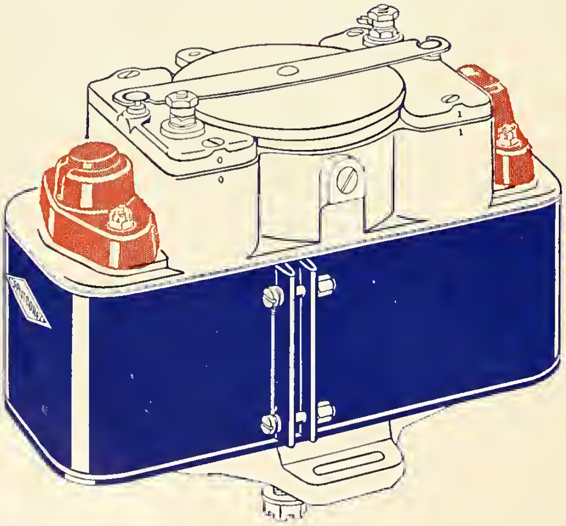
AERO DIGEST

AN-AMERICAN NUMBER

A SPLITDORF aircraft ignition instrument of advanced design

Splitdorf Model VA Double
Vertical Magneto



THE Splitdorf Model VA Double Magneto is an advanced type of aircraft magneto — an instrument built to provide utterly dependable ignition for the heaviest types of modern engine with from four to twelve cylinders. It is the product of a manufacturer who, for years, has been contributing to the progress of aviation by supplying the aircraft industry with magnetos modern in design, thoroughly reliable and highly efficient in operation.

The Splitdorf Model VA Double Magneto has two independent electrical circuits and produces four double sparks per revolution, either synchronized or staggered. This instrument is provided with thirty degrees advance. It weighs, without distributor block, 13½ pounds.

Splitdorf airplane magnetos include types for all classes of engines with from two to twelve cylinders. Full information on request. Splitdorf Electrical Company, 392 High Street, Newark, N. J. *Subsidiary of Splitdorf-Bethlehem Electrical Co.*

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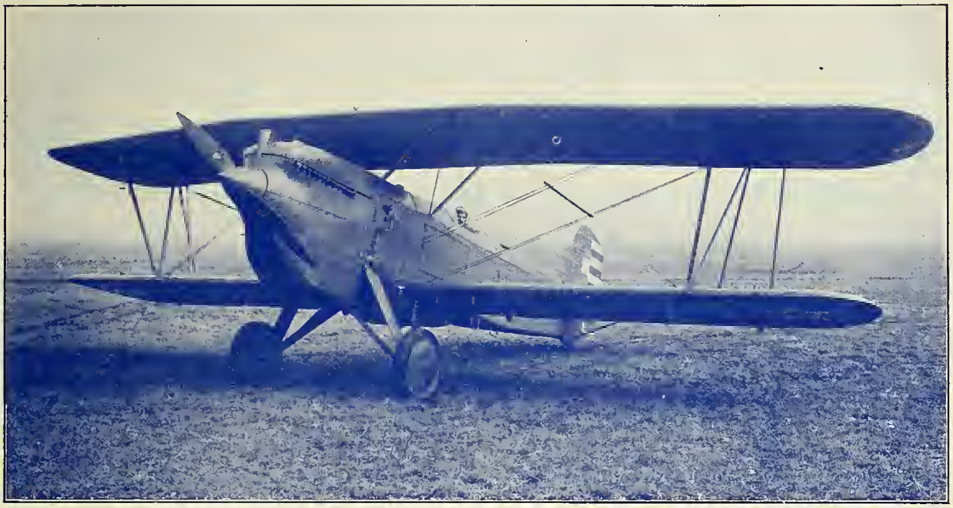
FOR THE NATIONAL GUARD



THE NEW CURTISS "FALCON"

A recent contract awarded by the Government will make available this year, a quantity of Curtiss "Falcons" equipped with the Liberty motor, for use by the National Guard.

The "Falcon" has the highest performance of any two-seater military airplane in service today. Having thoroughly established its superiority by service tests extending over the past two years, it is now being purchased in large quantities as the standard service observation and attack plane of the Air Corps.

The equipment of the National Guard with the "Falcon" is in accordance with the far-sighted policy of the government in providing all branches of the service with the most modern of aircraft materiel.

The CURTISS AEROPLANE Curtiss **AND MOTOR CO., INC.**

Offices:
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DURING the recent floods in India, Valspar again demonstrated its wonderful waterproof qualities for which it is famous the world over. For hours at a time the Valsparred buses of Calcutta had to plow through the flooded streets, but when the water and mud were wiped away, the Valspar finish always came up smiling!

Because Valspar is so remarkably waterproof and durable, it is the one varnish that is universally used to protect surfaces exposed to water, weather and hard wear. On airplanes of all kinds it has met with such widespread favor that now it is known the world over as the standard varnish for airplane use.

In the aviation service, Valspar has proven many times its remarkable ability to "stand the gaff." Valspar protected the NC-4, the "Round-the-World" planes, Commander Byrd's North Pole Fokker and dozens of other famous planes, not to mention the many hundreds of planes in daily service.

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As a companion to Valspar, Valentine & Company offer Nitro-Valspar, the all-lacquer airplane finish. To be sure of satisfaction use Nitro-Valspar if you want lacquer, and Valspar if you want varnish. Each is the most durable and economical finish of its type in use today.

VALENTINE'S
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The Varnish That Won't Turn White

The Valsparred 1925
Schneider Cup winner

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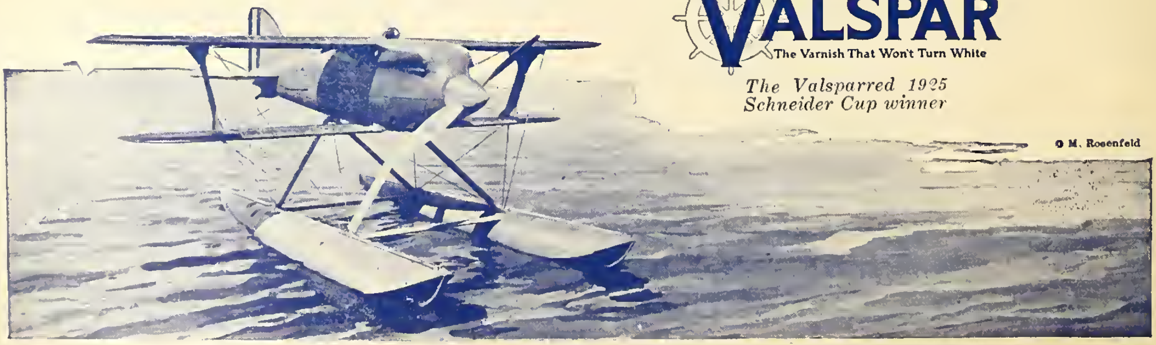

AERO DIGEST

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MAY, 1927

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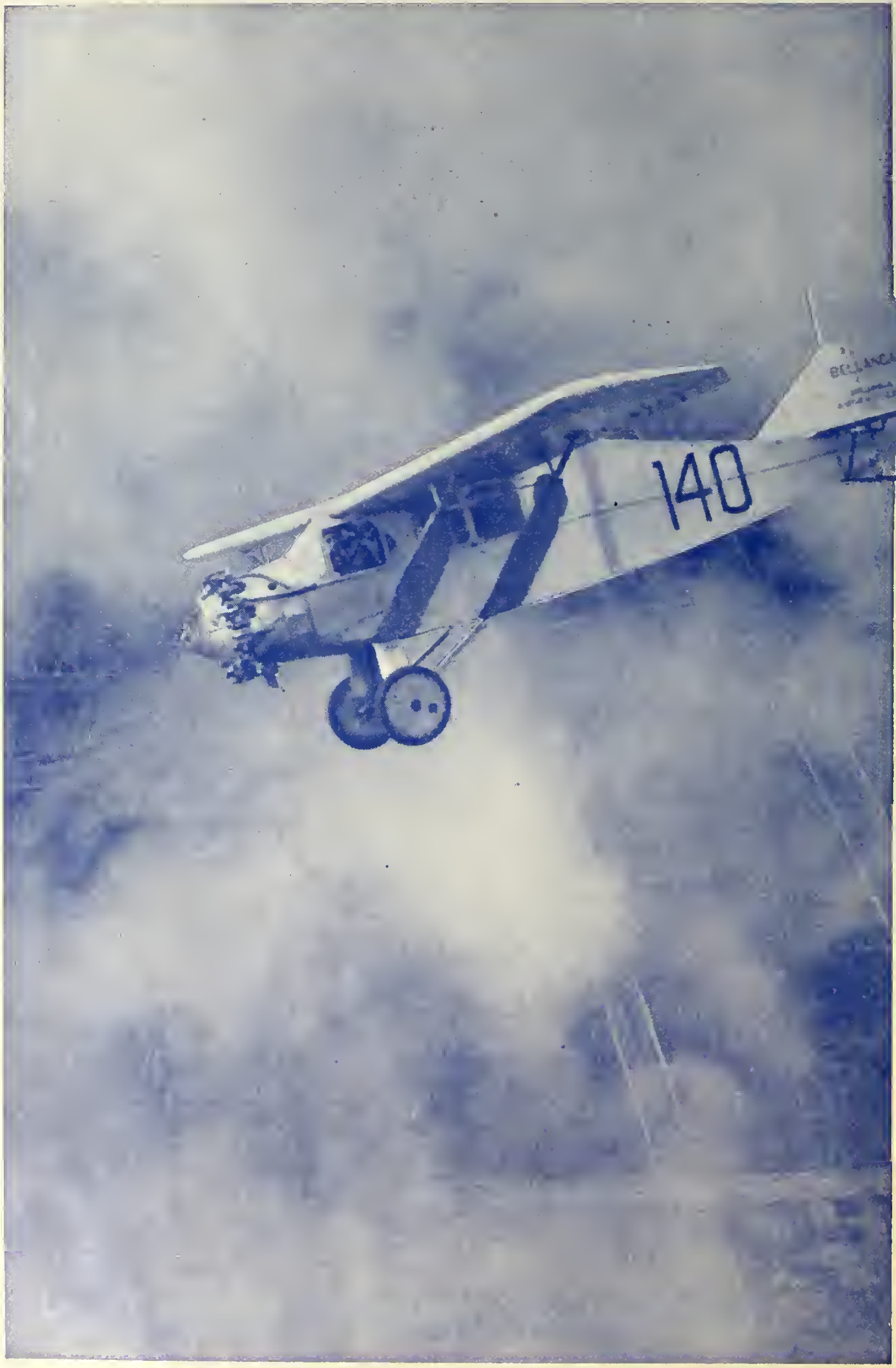

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The Bellanca Monoplane on its Endurance Record Breaking Flight

Bert Acosta Giuseppe Bellanca Clarence Chamberlin © Acme.

FIFTY-ONE HOURS in the AIR!

The Bellanca Monoplane on April 14th broke the world's endurance record by staying in the air 51 hours, 11 minutes, 25 seconds. The men most responsible for this achievement gave these messages to Aero Digest Readers—

Bert Acosta

Pilot

THE plane is a complete success. We left the ground with a take-off of only 1,500 feet instead of the 2,000 we had expected and we got in the air easily while throttled to only about 1,250 r.p.m. Thus we were able to conserve our fuel with plenty of reserve power needed.

The flight was uneventful and there was nothing to worry or trouble about. We took turns at the stick but often we merely set the course and let the stabilizer do the work. There were long periods during which neither of us was at the controls and the glass-enclosed cockpit enabled us to talk and break the monotony of the trip. We took turns at handling the plane and sleeping. Of course we did not sleep very much.

We were taught the lesson that in a transatlantic flight there will have to be better arrangements to take care of food. After we had eaten the sandwiches and the chocolate we found that the coffee and soup and milk had all turned sour due to the heat of the tanks. That is a minor detail, of course, but will have to be taken care of on an extended trip.

I believe we traveled between 4,000 and 4,080 miles. That would have taken us far beyond Paris in a straight line and makes us feel very confident about attempting the transatlantic trip.

When we beat the American record we had our first thrill and congratulated each other, then we set out after the French mark which was a world's record. When we beat that we were mighty happy. Things were going so well and we had so much gas left that we knew we could keep flying until we had been up at least fifty hours and we did!

Giuseppe Bellanca

Designer

THIS is indeed the crowning achievement of my career thus far and I hope that it will be overshadowed by a successful flight to Paris next month.

I have been actively engaged in aviation since its earliest beginnings. My first ship, a monoplane, I built in 1908, while a sophomore in the Technical Institute at Milan, Italy. That turned out to be not much of a success but it taught me valuable things. Two years later I came to America where I had the opportunity to work out my ideas.

Soon after coming here, I built and flew a single-seated monoplane on the old Mineola field that many of the old-timers will remember. The good results I obtained encouraged me to open a flying school, which I ran with fair success till 1916; but during all that time I was constantly at the drawing board working out ideas or experimenting with new models and looking for constant improvements.

I remember when we were all working at the terrifying problem of crossing the English Channel, a matter of 21 miles. I built a plane expressly for the trip, but at the day set for the flight we were not quite ready, various mishaps occurred, and Blériot made the trip ahead of everybody. That was in 1909—it is wonderful that less than twenty years later we prepare for a transatlantic flight with less trepidation and more confidence of success than we had then.

This fifty-one hour trip was made to prove to the world that our machine can actually cover the distance to Paris. No matter what happens in that flight no one can ever say that we were unprepared as far as the plane was concerned. And as to the flyers: where can we find men than Bert and Clarence?

Clarence Chamberlin

Pilot

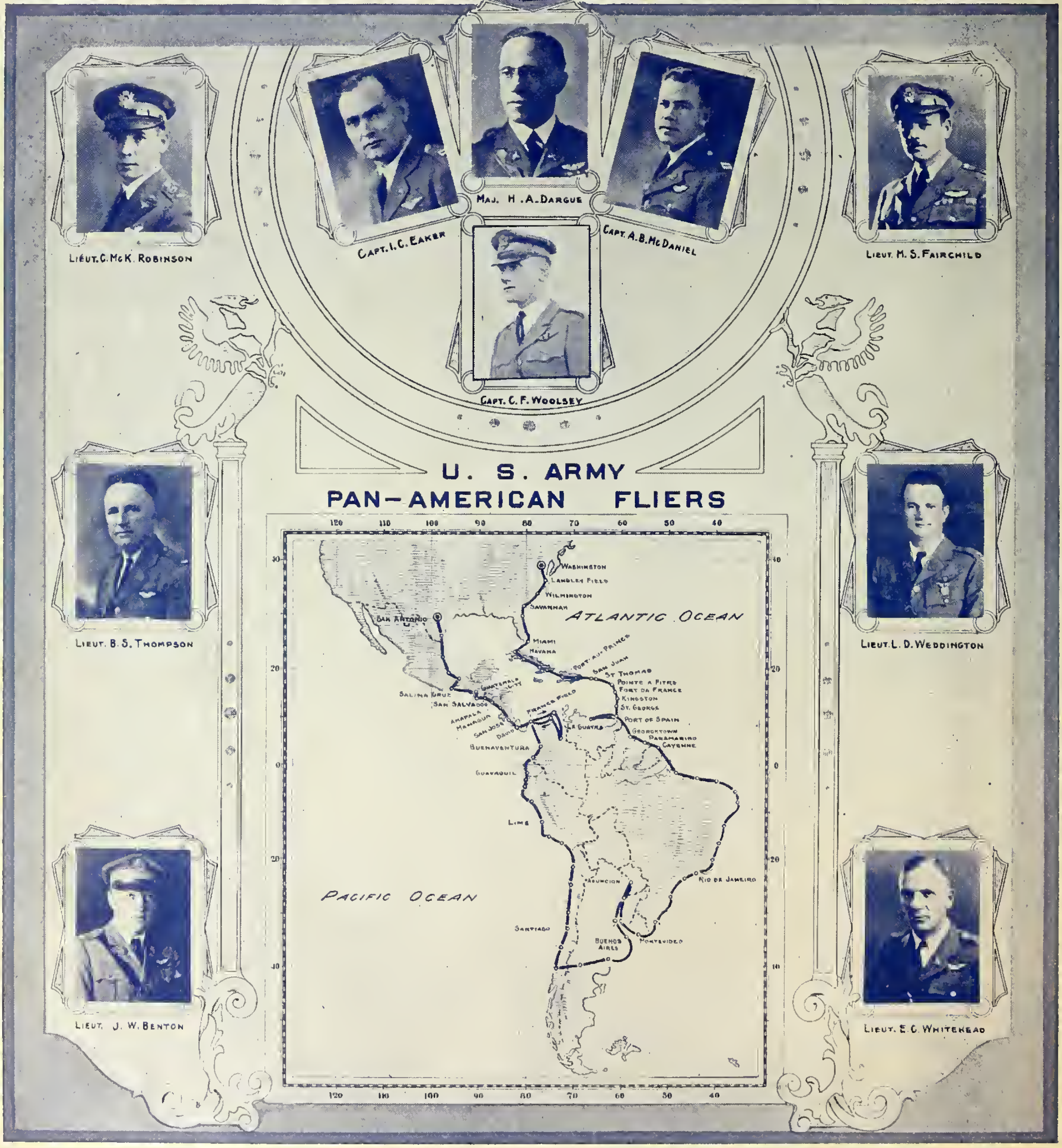
SINCE 1919 I have been flying ships built by Bellanca and it was with a great deal of confidence that I made this attempt with Bert Acosta to break the world's record for duration. I knew that all we needed was a suitable ship and a dependable motor. Although I have had over 2,500 hours in the air, this experience was new to me.

In taking-off our greatest concern was of course in making sure the ship would carry the great load of 380 gallons of gasoline and so we really took-off three separate times. After the last take-off we were a few hundred feet above the end of the runway we had cleared for the purpose. We took the ship up to 2,000 feet and then throttled the engine down about 50 revolutions per minute every few hours until we were using the minimum of power. We found we could still climb with 1,500 r.p.m.

As the gasoline was being consumed, gradually we cut down power until the engine was turning at only 1,000 r.p.m. at the end.

We found it very hot during the day but at night it was quite chilly, and the gasoline tank was not exactly a comfortable sleeping place. I really slept only a half hour, just before daylight, on the first night and on the second night I had but two hours' sleep. We kept the ship within a short distance of the field at all times. At one time we had practically decided to land as soon as we had passed the former record but then I remembered my promise to Bellanca: I had told him we would stay up until every bit of gasoline was gone, so we stuck it out until we heard the motor give a final gasp. I turned to Bert and remarked: "Well, Bert, I guess that's all".

THE ARMY AIR CORPS PAN-AMERICAN FLIGHT



FIRST to fly around the world and now first to circumnavigate the South American continent by air, our Army airmen, upon their arrival in Washington on May 2, will have completed one of the longest and most picturesque flights ever staged by our military forces.

The flight approximates in mileage the circumference of the globe and in duration and importance it rivals the Army's world flight of 1924

The purpose of the flight was to strengthen the amicable relations already existing among the American republics and to demonstrate the feasibility of aerial transportation and communications between these widely separated nations. No efforts were made to attain speed records, the stops being so arranged as to permit the personnel of the flight to visit the capitals of the nations along the itinerary and deliver messages of good-will and friendship from

President Coolidge and the people of the United States to the Latin-American republics.

Ten master airmen of the Army Air Corps were selected for this important good-will mission:

Major Herbert A. Dargue, flight commander, piloted the flagship *New York* with Lieutenant Ennis C. Whitehead as relief pilot.

Major Dargue was born in Brooklyn, N. Y., 1886; graduated from the U. S. Military Academy in 1911; served in the Philippines, 1913-1914, making a total of 123 observation flights for the Coast Artillery and conducting successful experiments in sending radio messages from hydroplanes while there; served overseas, training pilots and observers; is a distinguished graduate of Command and General Staff School, and was on duty in the office of the Chief of the Air Corps as Assistant Chief, Training and War Plans Division at the start of the flight.

Lieutenant Whitehead was born in Westphalia, Kansas, 1895; received flying training at Chanute Field, Illinois; served overseas as test-pilot, and instructor; participated in several International Air Races and was on duty with the Field Service Section, Supply Division, Fairfield, Ohio.

Captain Arthur B. McDaniel, second in command, flew the *San Antonio* with Lieutenant Charles McK. Robinson.

Captain McDaniel was born at San Antonio, Texas, 1895; received his flying training at Kelly Field and served there as Chief of Training of Advanced Flying School.

Lieutenant Robinson was born in 1894 at Columbus, Ohio; served in the Philippines; received flying training at Kelly Field and was on duty at Fort Crockett, Texas.

Captain Ira C. Eaker, third ranking officer, flew in the *San Francisco* with Lieutenant Muir S. Fairchild.

Captain Eaker was born at Llano County, Texas, 1896; received flying training at Kelly Field; had considerable experience in cross-country flying and was on duty as Assistant Executive Officer, Office of Chief of Air Corps.

Lieutenant Fairchild was born at Bellingham, Washington, 1894; received flying training in France and Italy; participated in night flying and bombing raids over Germany; awarded Croix de Guerre; is well-informed on radio, telegraphy, electricity and mechanics in general and was stationed at Langley Field.

Captain Clinton F. Woolsey, maintenance officer of the flight, commanded the *Detroit* with Lieutenant John W. Benton.

Captain Woolsey was born at Northport, Michigan, in 1894; trained and performed duty overseas, was chief test pilot at Brooks Field and was considered one of the Air Corps' best pilots; was on duty at McCook Field.

Lieutenant Benton was born at Manton, California, 1896; received flying training and was flying instructor at Rockwell Field, San Diego, California; was on duty at Crissy Field, Presidio of San Francisco.

Lieutenant Bernard S. Thompson piloted the *St. Louis* with Lieutenant Leonard D. Weddington.

Capt. Woolsey

Lieutenant John W. Benton

Lieutenant Thompson was born at Bagdad, Florida, 1892; completed flying training at Gerstner Field, Lake Charles, Louisiana; was instructor in flying and wireless telephony at Dorr and Carlstrom Fields, Florida; participated in 1925 and 1926 National Air Races and was on duty at Phillips Field.

Lieutenant Weddington was born at Childress, Texas, 1895; completed flying training at Taliaferro Field, Texas; specialized in aerial photography and is considered an exceptional photographic officer; was on duty at Fort Sam Houston, Texas.

Over mountainous coasts, surging seas and impenetrable jungles, through treacherous storms and blistering heat these Pan-American flyers at the end of their journey will have covered approximately 20,000 miles.

The five planes left Kelly Field, San Antonio, Texas, on December 20, followed the east coast of Mexico, crossed the Isthmus of Salina Cruz and proceeded to Panama with stops in Honduras, Nicaragua and Costa Rica. From Colon the flight went to Colombia, returned to the Canal Zone and flew along the west coast of South America as far as Valdivia, Chile, where it crossed the Andes and reached the Atlantic side at Bahia-Blanca, Argentine. Following the east coast, the planes flew to Buenos Aires and made a 1400-mile round trip up to the Parana River to Asuncion, Paraguay. Next came Brazil, the Guinas and Venezuela. At Trinidad the flight left the mainland and made a series of hops which covered the Lesser Antilles, Porto Rico, the Dominican Republic, Haiti and Cuba, landing at Miami, Florida on April 23rd. From there to Jacksonville, Savannah, Wilmington, N. C., and Bolling Field.

A group of planes headed by Major General Mason M. Patrick, Chief of the Air Corps, who led the way as far as Mitchell Lake on the start of trip, met the flyers off the Florida coast and were the first to welcome them on their return to the United States.

A shadow is cast over the joyousness of the homecoming, however, as only eight of the airmen return. Captain Woolsey and Lieutenant Benton lost their lives at Buenos Aires on February 26 when the *Detroit* collided with Major Dargue's flagship, the *New York*.

To the public such an item is a matter of casual news in these days of humanity's generally terrific strain. To the air-minded news of this sort is one more evidence that the gallantry of to-day is not surpassed by that of yesterday or any time, that the innate urge to do one's best for the honor of one's country is as great now as ever it was. The understanding mind reflects with reverence—even with a little awe—upon the splendor of these deaths.

Escorted by planes from Langley Field and greeted by planes stationed at Bolling Field, the four Pan-American planes—the *New York 2nd* was flown from Panama to Porto Cabello, Venezuela, where it joined its sister ships on their northward journey—will make a spectacular entry into Washington on May 2, where *(Concluded on page 485)*

AIR TRANSPORTATION AND COLONIZATION IN SOUTH AMERICA

By Adrian Van Muffling

If one looks at a map of the world and asks which of the five continents offers the greatest opportunities for commercial aviation and will be benefited thereby to the greatest extent, one will point almost unerringly to South America. Economic conditions and geographical situation work hand in hand to that effect. It is no exaggeration to say that these conditions are such that the greatest part of the continent never can be fully developed without a method of transportation more flexible than any known before the days of aviation. The vast and yet almost unknown regions of the interior—so difficult of access that railroad building is virtually impossible—are awaiting the only means of communication with which they can be reached quickly and efficiently, regardless of intervening swamp, jungle or mountain range. It is there, if anywhere in the world, that flourishing communities will arise, of which the existence will be based solely on aerial transportation, just as similarly situated communities in our West owe their existence to the continuation of the great transcontinental railroads.

AIRLINES NOW OPERATING IN

ARGENTINA

Buenos Aires—Montevideo. Operated every Monday, Wednesday and Friday by the Junkers Mission (German) with Junkers planes equipped with 185 h.p. B.M.W. motors. Carries passengers, mail and freight.

Villa Dolores—Cordoba—Rio Curato. Operated by Aero Lloyd Cordoba which was formed by the German Junkers Co. Five Junkers planes carry passengers, mail and freight.

BOLIVIA

Cochabamba—Santa Cruz. Operated by the Lloyd Aereo Boliviano (German) with Junkers planes.

Cochabamba—Trinidad. Operated weekly by the Lloyd Aero Boliviano for carrying mail only.

BRAZIL

Buenos Aires—Rio de Janeiro—Pernambuco. Operated by the Junkers Aviation Co. with 3-engined Junkers planes. No passengers carried at present, but expect to do so shortly.

CHILE

Valparaiso—Santiago. Air Mail Service.

COLUMBIA

Barranquilla—Girardot.
Girardot—Neiva.
Barranquilla—Cartagena.
Sabana de Torres—Bucaramanga.

The above air services are operated regularly by the SCADTA (Sociedad Colombo Alemana de Transportes Aereos).

MEXICO

Vera Cruz—Progreso. Operated by the Aero Lloyd under name of Campania Aero-Naviere del Golfo de Mexico using Dornier 600 h.p. 8-passenger planes.

The development of South America has taken place mainly along its coasts, both East and West. Only in the southern portion in Argentina and Chile where the climate and general character of the country more nearly approaches our own, has colonization in the interior been carried out to any great extent. The greater portion of the country, however, including inner Brazil, the southern part of Venezuela and Colombia and that part of Peru and Bolivia which lies east of the Andes, is a country so densely grown with impenetrable forests cut up by mighty rivers that rail development is economically impossible, in spite of the great wealth in natural and mineral resources of which explorers have shown us a glimpse now and then. The difficulty of travel is well exemplified in the case of Peru. To reach the eastern part of the country from the capital on the Pacific coast, a matter of only a thousand miles or so in a straight line, travelers find it necessary to sail all the way north to Panama down the Atlantic coast to the mouth of the Amazon and then up that river for two thousand miles; a trip of eight thousand miles and a matter of several weeks, which could be negotiated in a few hours by airplane.

With the exception of Argentina, travel between the populous cities along the coast is done mainly by steamer. And along the coast railroads cannot be built to any great extent for the following reasons. Along the west coast on account of the Andes which are frequently cut by huge transverse valleys, so wide and so deep as to be practically unsurpassable by rail except at a prohibitory expense. Along the Atlantic, on the other hand, where the land slopes gently toward the sea, the coast is largely swampy in character and is moreover cut by estuaries of rivers several miles in width, which no railroad could ever hope to cross. As a matter of cold fact the old dream of a railroad connecting all the capitals of North and South America, which looks so attractive and simple when drawn on a map is bound to remain a dream for many years to come, and perhaps forever. Individual stretches of it may be, and indeed have been built. But the above difficulties will militate against its ever being economically feasible as a unit, and unless it can be made to pay it is unlikely that capital can ever be interested in its construction.

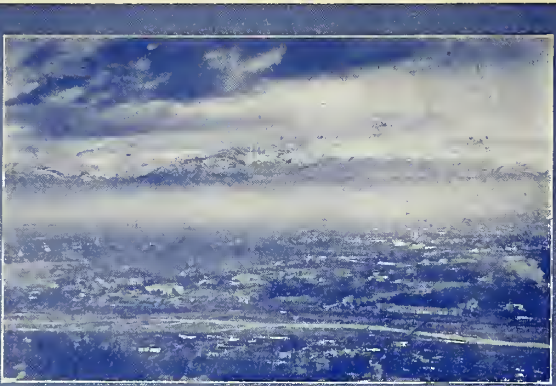
This very difficulty of developing a comprehensive railway system creates an ideal opportunity for aviation. We have here a country with its natural resources almost untouched, except along a narrow strip of coastline containing populous cities which are yet largely dependent on importations from abroad for their industrial and economic life, and which cannot profitably tap the resources of, so to speak, their own back yards. Airplane transportation is the only logical solution.

In the past few years several interesting experiments have been made with highly gratifying results. We mention but the Scadta line which under German management has been operating for several years up the Magdalena River in Colombia, the line in French Guiana which has been exploited since 1921 and the more recent development of certain American industrial interests along the west coast. Systematic exploitation of the interior, however, could not take place until the airplane itself had reached its present state of independence from motor trouble. Hitherto a forced landing in the jungle or on the desolate rivers of the interior was a serious matter. The advent of the multimotored plane, offering freedom of anxiety from forced landings, solves that problem.

One need not necessarily picture the entire continent to be crisscrossed by airlines which will carry all the traffic, though that is not an impossibility for the future. As we all realize, the airplane will never entirely supplant either rail or water transportation. What the interior of South America needs most, however, is colonization and settlements that will in time grow into flourishing cities. We have seen in this country, in Africa, Australia and wherever new regions have been opened up that colonization follows, and does not precede transportation. Men will not settle in any quantities in a place which takes them weeks and months to reach, and where they are completely out of touch with the world they have left behind. And this is all the more true to-day since the standards of living have so greatly improved all

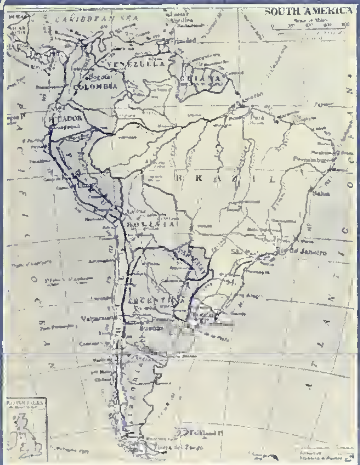
(Continued on page 483)

Santiago, Chili



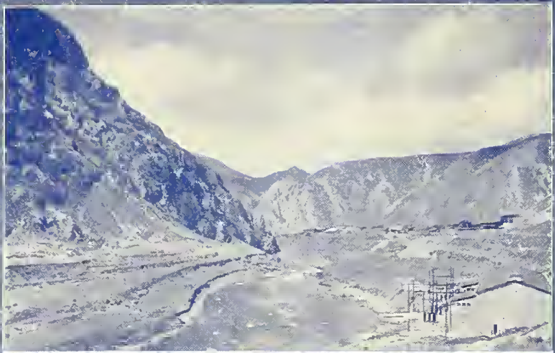
Santiago

Rio de Janeiro



Mexico

La Paz, Bolivia



Peru

Buenos Aires, Argentina

Venezuela

Bird's Eye Views of Some Beautiful Scenes in Neighboring Southern Countries

AIR—HOT AND OTHERWISE

Let's Work Together!
Fight—But Fight Fair!

Frank A. Tichenor

"WHAT'S an ocean more or less between friends?" Lord Balfour asked, one evening, just after America had entered the war and a dinner was being given at the American Officers' Club in London to a Yank newspaperman about to return to this side of the Atlantic.

It didn't seem much, just then, when the Americans were pouring over seas in great fleets of mighty transports, even though the submarine peril made the process slow.

In these days we shall do well if we inquire, and even with a rather chilly curiosity, if we be Americans: "What's an ocean more or less between enemies?"

For we all know it won't be much in the near future.

Transatlantic flights, would-be transatlantic flights and near transatlantic flights, fill the air these days—at least they fill it with rumors and the voices of the newsboys crying extras.

What an inspiration to the delegates who are coming up from twenty-one Pan-American nations as we write these words. The educational conference at which they are to be our guests in Washington bids fair splendidly to advance the glorious cause of aeronautics on this hemisphere by a very creditable hop. We believe this conference to be one of the most important of the several which have been held. It will mean much to our commerce, and its even more important meaning will be that of its effect upon American friendships and American civilizations.

It is impressive—this gathering of every manner of Americans for the purpose of discussing progress and without a single quarrel to settle, or a single chip upon a shoulder. The conference will have far less to say about past problems than about future progressions. We have done some fighting in this hemisphere. Now and then we have rared up and really hollered, shooting off firearms extensively. But not the wildest stretch of imagination could picture the Americas as an armed camp, and not the most moderate imagination can picture Europe as anything else. The hip-pockets at this conference will conceal well-filled wallets (I naturally say nothing about flasks, for is not our national capital a city of teetotallers?) not automatics. That's something, brethren. The ignorant may say what they like about South America as a land of revolutions. The idea in these days is pure mush.

There have been some scraps down there; there have been some scraps up here. But South America and North America alike long have been peaceful pools of brotherly love compared to Europe. Beginning with the Argentine and going right down through the alphabet to the V which stands for Venezuela, with Brazil's B, Chili's C cheek by jowl down south with Columbia's and Canada's up north and not forgetting the United States with its distinctly capital U, the alphabet on this side has been pretty fairly orderly, even if of recent years the M of Mexico rather often has stood for murmuring and some of the lads down on the Isthmus have been a bit excitable.

One of the things which will keep up happy will be the spread of general knowledge of aviation throughout Latin-America and the establishment and development of commercial airlines linking up all the great northern centers with all those of the South.

We, here in the office of AERO DIGEST, are enthusiasts concerning this great conference. We believe that it conceivably can do more than Woodrow Wilson and his League of Nations ever dreamed that they could do to help the peace of the whole world.

If we of the United States fully grasp this opportunity we shall send back to the twenty-one nations represented at the conference a message personal from each citizen of the United States to each citizen of South America; not a "hook up with us to fight, boys" message, but a "hook up with us to work, boys," message. "Let's coöperate," should be the burden of this convention's song (strictly congregational singing) and it should make it clear that we want to receive as well as give help in working out the common problems.

The aviation problems of the Americas are positively identical. Ours are theirs and theirs are ours. There may be a difference of degree, but there is none of character. For the United States of North America to fail to have airlines running regularly above land to the various United States of South America would be a tactical, commercial and sociological error.

Down in Washington during this great conference we must show these South Americans that we're not selfish. We must make it clear to them that we want them to get participatory advantages from all our air advances. The lessons we have dearly bought through twenty-one years of ceaseless effort must all be freely placed at the disposition of our southern neighbors. We know that South Americans have that sixth sense which means the inborn flyer, for do we not all thrill to the mention of the name of Santos Dumont? The more friendly such folk are toward us the better it will be for us.

And we want the South Americans to realize that while we have nothing but admiration for that natural impulse which makes Latin blood on one side of the ocean "sympatico" with Latin blood beyond the sea, we prophesy, believe and persistently shall press toward proof of the theory that fellow-Americanism is a stronger tie than Latin blood.

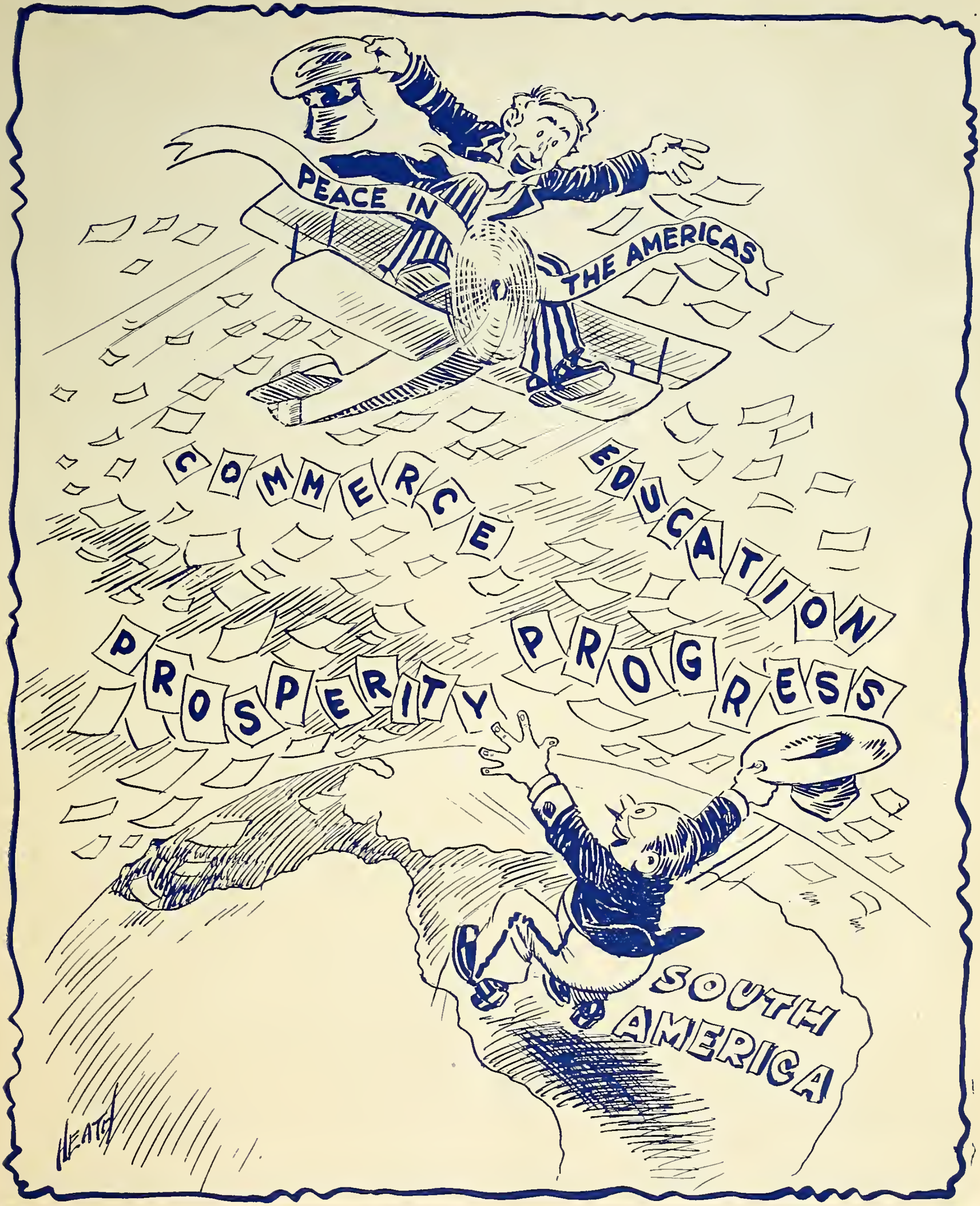
Indeed, let both be strong. If both are ties of friendship, they will work in combination toward mutual understanding, intelligent coöperation. Those are the only forces which can give us of this hemisphere the great gift of actual leadership through irresistible example in the impulse toward world peace. As far as North and South America are concerned let each consider aviation with every thought of peace and without any thought of war.

THE initials L. and G. were of importance during the World War. Until America entered they stood for the dynamic personality, Lloyd George. After America entered they were, among our doughboys, indicative of the dynamic urge, Let's Go. L. G., therefore, may be accepted as a significant letter combination, and one which with wisdom may be cherished by the friends of our American aviation. But we must be careful that between these two initials no outside, interloping alphabetical symbols shall intrude. L. D. G. for instance seems to stand for Let's Don't Go.

The Publisher's News Letter Department in *Aviation* magazine of March 21 is the forum of Let's Don't Go.

Among recent errors noted in that region by the detector on our editorial instrument board is the effort of L. D. G. to hang the onus of the American aviation situation around the neck of General Patrick. Mush, piffle, and then tommyrot. If Let's Don't Go

(Continued on page 480)



GREETINGS!

South America comes a-visiting the United States and gets a hearty welcome. As the people of both land divisions of the hemisphere begin to fly old psychological barriers between them will vanish and each group, growing stronger, will develop toward the other a newly vigorous friendship, for real acquaintance will bring real understanding.

POWER AND PROPULSION AT ALTITUDES

By Dr. Michael Watter

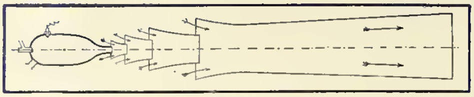
IN my article on super-aviation in the April issue of AERO DIGEST I described the recognized advantages of flying at high altitudes, at which the rarified atmosphere affords an opportunity of attaining super high speeds with notable economy. Aerodynamically the problem is comparatively simple because the airplane as we know it to-day, with probably small modifications, is capable of adaptation to this new service. The difficulty lies with the engine-propeller group which, in its present state, is efficient only for a restricted range and low altitude, becoming uneconomical at height.

With increase in altitude the power of an airplane engine decreases rapidly. This is due to the fact that since the air becomes rarified, and the volume of the cylinder remains unchanged, the quantity of oxygen available at altitude for the combustion of fuel at each stroke is decreased. The correct mixture is obtained then by decreasing the amount of fuel and thus decreasing the power of the engine. There are other factors which contribute to this but it is not intended here to dwell upon technicalities.

We have available various means to prevent the decrease of power with altitude but I briefly review only the most promising possibilities from the standpoint of future developments. (1) The engine may be made overcompressed, (2) overdimensioned, (3) fitted with a supercharger, or (4) it may be fitted with a partial supercharger and made to work at higher revolutions at altitude.

Engines fitted with superchargers are gaining favor and it seems that very soon the supercharger will be standard equipment of an airplane motor. Under the name "supercharger" we refer to a special type of blower which supplies the engine with air under pressure higher than the operating altitude.

Root Type Super-charger.



Explosion Chamber and Escape Nozzles of a Jet-Propulsion Unit.

There are numerous types of superchargers but the most popular ones are centrifugal, Root type and Wittig type.

The most serious drawback of the centrifugal type is the high number of r.p.m. (30,000 or more) with a consequent delicacy of moving parts and resulting cost. The centrifugal supercharger with a turbine, however, has a big future and this type of arrangement is discussed below.

The principle of operation of Root type supercharger is similar to a sprocket wheel oil pump, with the difference that instead of two sprocket wheels there are two specially profiled cams. The Wittig type of blower is constituted of an eccentric drum rotating inside of a circular chamber. In this drum there are slots, with sliding plates inside, kept in constant contact with the walls of the compressor's chamber by the pressure of springs fitted inside the slots. These sliding plates of Wittig's arrangement are equivalent to the profiled cams in the Root type supercharger.

Colonel Italo Rafaelli of the Italian Air Service suggests another means of preserving the power at altitude. He indicates that by using ordinary compressing cylinders, that is, piston type supercharger of the size of the engine cylinder, it is possible to obtain partial gain of power, further gain being obtained by increasing the number of r. p. m.

The use of superchargers in preserving the sea level power wholly or increasing the altitude power partially and their beneficial effect is so well recognized that use of them is made even for sea level and low altitude work to increase the power of the engine.

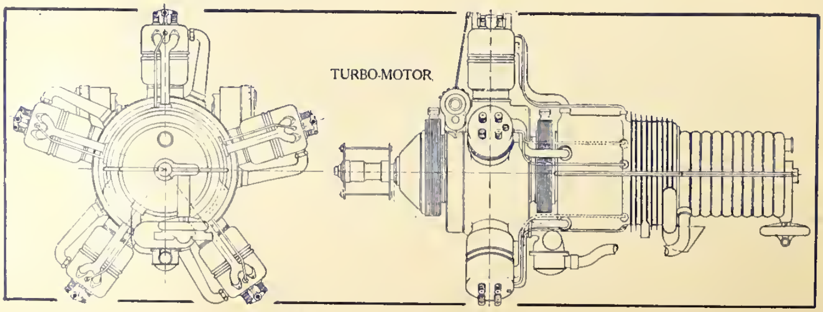
The general drawbacks of the present four-cycle explosion engine directed the efforts of designers toward new types and I will review some new tendencies in this branch.

The logical step after the four-cycle explosion engine is a two-cycle one. The main advantage of this type is gain in power, other characteristics, such as altitude performance, fire hazard, etc., remaining practically unchanged. Several two-cycle engines were already built and some tried on airplanes, but as an interesting illustration of this type of engine, I am citing a motor boat engine of Dr. Etchegoin, which is being converted by Mr. Cansan for airplane use. This engine is water-cooled at present but as an airplane engine it is intended to be made of air-cooled type. The main feature of this engine is an adoption of Root type supercharger and an efficient arrangement of pistons and ports. There are two opposed pistons in each cylinder so that the compression chamber is constituted of the walls of the cylinder and tops of the two pistons. The intake and exhaust ports encircle the walls. The general arrangement of the engine is very similar to Dr. Junker's two-cycle aircraft engine which made its appearance some five years ago in Germany and gave very promising results.

As a further step in the development of an efficient power plant one naturally thinks of a gas turbine with its operating and thermo-mechanical advantages. Absence of vibration, efficient thermical cycle, greater operating elasticity are to be gained with this type of unit and, as a result, there were numerous studies made of gas turbines. They did not see practical realization mainly on account of high temperatures involved. In fact, it seems that a compromised design has the most immediate possibilities.

In *Rendiconti Tecnici*, Colonel Italo Rafaelli gives an interesting design of an engine-turbine, which I will describe briefly.

The complete group consists of a supercharger which feeds the air under sea level pressure to an ordinary fixed radial engine. In this engine occur the explosion of mixture and first phase of expansion. The burnt gases are directed into a turbine where the final



Turbo-Motor of Colonel Italo Rafaelli.

expansion gradually takes place.

The characteristics of the unit are: Brake horsepower, 450 h.p.; r. p. m. of propeller, 1,600; r. p. m. of turbine, 12,000; r. p. m. of the motor, 3,000; power constant up to 16,500 feet.

The general design is interesting and feasible and should the efficiency of the turbine be higher than assumed in calculations, the problem, according to Colonel Rafaelli, can be readily solved.

Studies are not centered exclusively on the gasoline type of engine. The Diesel type attracts the attention of engineers because of its fuel economy, absence of fire hazard and, according to some, the possibility of obtaining higher power per cylinder by using superchargers and high pressures.

Mr. Sperry recently made public his experiments with a Diesel type engine and the results seem to be very promising.

As a further step in the perfection of the power unit, it is interesting to consider a very original design of General Guidoni, published by him in *Rivista Aeronautica*. He presents a preliminary design of a heavy oil turbo-motor of 1,200 h.p. The motor is of Diesel type and the complete cycle of the unit is the same as in Colonel Rafaelli's gasolene turbo-motor.

The advantages claimed by his design are higher efficiency thermic cycle, the possibility of using higher pressures, thus decreasing the weight per horsepower, and minimizing power loss by increasing the range of expansion. In his design, the difficulty, besides the adoption of the Diesel cycle, is the high temperature involved. We are, however, in possession of metals capable of preserving high strength properties even at very high temperatures. This condition also is improved by the fact that the explosion and first phase of expansion occur in an ordinary engine unit, so that the temperature of gases admitted into the turbine is considerably lowered. It is proposed to obtain cooling by means of steam.

The problem of super-aviation, however, is not centered exclusively on the possibility of conserving power at altitudes. There is another point of importance which must be solved before we can attain speeds aimed at by flight at high altitudes. Although the airplane propeller in its present state is adaptable to speeds much higher than now employed, it is questionable, and at present seems improbable, that it will be used in superplanes of the future.

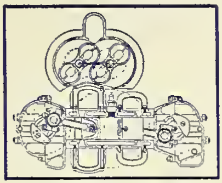
An ordinary fixed blade propeller is designed for a certain ratio of V/ND at which it has the maximum efficiency. Above and below this ratio the propeller becomes less efficient and this decrease is quite pronounced. In connection with operation with an ordinary engine, the conditions at altitude are not so bad; in fact, since the density decreases, the propeller has a tendency to speed up if it were not for the fact that the power decreases also and hence a state of work equilibrium is obtained at normal r. p. m. As a result, the ordinary engine-propeller group is adaptable for use at altitudes with the limitations of decreased speeds as we fly higher.

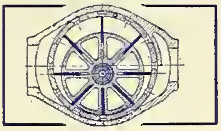
Should the power remain constant the present propeller can be used efficiently only for limited altitudes and for this purpose it must be over-pitched so that with gain in altitude the tendency to speed up will be checked. This increase in the pitch must not be excessive as the airplane must be able to take off at sea level. The inconveniences of this type therefore are: (1) If the altitude for which the propeller was designed is too high the plane will not be able to take off. (2) Above the designed operating altitude conditions remain unchanged, that is, the propeller will have a tendency to speed up.

Another way to adapt the present propeller for high altitude work is to use a gear shift similar to that in an automobile. This method is particularly suited to the power unit proposed by Colonel Rafaelli, where the power at altitude is partially preserved by a piston type supercharger and partially by increase in r. p. m. of the engine.

The problem of high altitudes and not excessive speeds can be readily solved also by a variable pitch propeller. This type of propeller has been tested out in several countries and the results are encouraging.

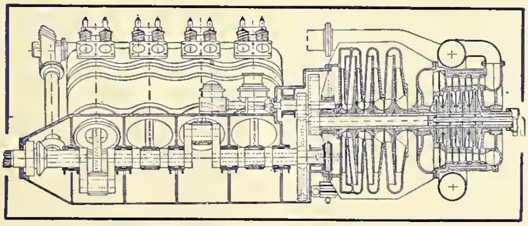
All these systems have the natural drawback of an air propeller, namely, presence of slipstream, relative fragility and the space required for its functioning. Speeds of 400 miles might be attained by a perfected propeller but the speeds of the superplane probably will be achieved by wholly different means of propulsion.


Dr. Etchegoin's Two Cycle Engine.


Wittig Type Supercharger.

Of the types of future propelling units, such as turbine-propellers, etc., there is one, a very radical one, favored by many experts. It is known as jet propulsion.

Jet propulsion does away with the engine and propeller. In this case the power-propelling system is a unit. Jet propulsion means a direct employment of the reaction caused by the escape of explosion gases. It must be understood that this method of propulsion is suitable only for super-speeds; for speeds of about 800 m. p. h. This would be a very uneconomical means of propulsion. Mr. Buckingham, in the NACA Technical Report 159 gives the results of a thorough theoretical investigation of the problem and comes to the conclusion that "the reaction of a simple jet cannot compete, in any respect, with air screw propulsion at such flying speeds as are now in prospect." "In prospect" refers evidently to speeds of about 400 m. p. h. The mechanism required for jet propulsion consists of an air compressor, explosion chamber and multiple escape nozzles.


Turbo-Motor (Diesel Type) of General Guidoni.

One of the most energetic advocates of jet propulsion in Europe is Colonel Crocco. His attention was probably attracted by this problem because of its importance in long range gunnery and by his vision of super-aviation. In his note presented to the Royal Academy of Lincei he gives an analysis of the problem of jet propulsion in his usually original way. Departing from general dynamical equations of mechanics he arrives at the following conclusions: In case of jet propulsion (1) The range of flight is roughly proportional to the maximum design speeds and independent of the escape speed of gases. (2) The speed range diminishes with increase in maximum speeds and is also independent of the escape speed of gases. (3) The specific consumption decreases with

(Continued on page 483)

AERO DIGEST

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AVOID THIS MISTAKE

THERE is some talk in Washington of a new line up, having in view the making of the Assistant Secretary of War for Aeronautics the real head of the Army Air Corps.

This would involve a density of sheer stupidity of which even Washington is certainly incapable. Although in the present instance the Secretary for Aeronautics happens to be a flyer it is by no means certain that the office always will be filled thus. Among the hazards of the future is the chance that to this post may be appointed men who will be merely good politicians, or good businessmen, or good party friends of the then incumbent President with political debts to pay to some well organized state. Such things have happened with every cabinet office in this country.

In this connection, as always in connection with a cabinet appointment, the question must arise as to which will be the better, the specialist or the intelligent man without technical knowledge and training. The Secretary of War doesn't even pretend to operate the Army. But every branch of each general department has as operating head a technically trained expert.

Heaven knows the Air Corps needs exactly that far more than any other. It needs an individual of power and wisdom, fully conversant with the problems involved and knowing who's who in the game to the last detail. Nothing less than this equipment could fit a man to select intelligently experts competent to do those jobs which only experts can ever be expected to accomplish.

This is the most highly specialized of all services. It is important that the accomplishments and the abilities of all men under him should be not only known but understood by the man placed at its head.

The Air Corps has advanced in spite of definite oppression by the General Staff; it has advanced in spite of general neglect by the Secretary of War. It would be tragic for the corps, for the Army and the nation if at any time it should be placed under the direction of a political appointee.

BETTER LUCK SURE TO COME

RAILROADING and steamshipping had their troubles in their early developments. Air travel will have its. Accidents will happen now and then in the best regulated experimental efforts of any new art. When the reverse occurs we have a startling success.

This will happen in the case of the transatlantic attempts and after it has happened will begin the long, gruelling, nerve-racking processes of building a new system of transport—building it from the ground (or sea) up—way up.

It has been a long time since the discovery of fitting words has been more difficult than now as we endeavor to say something exactly right about Commander Byrd, Lieutenant Bennett and Lieutenant Noville—the three air musketeers, honest-to-goodness sports, bubbling over with gallantry, determination and initiative.

The efforts of these splendid men already have accomplished wonders. No one is to be blamed because an accident prevented them from the success they deserve in their first transatlantic flight venture. It has not been followed by complainings from its victims, any more than it was preceded by extravagant predictions, or, when they finally succeed, will be followed by boastings. They are not that sort of human beings—Byrd, Bennett and Noville.

American aviation suffers a severe loss while this gallant trio is out of the game. May they get back into it quickly. They will be better able to guard against mishaps in the future because they have suffered this one. The accident won't shell shock these men. It will stimulate them to do bigger, better things than ever.

It is impossible to leave this topic without a word concerning Rodman Wanamaker. Real man, Rodman Wanamaker—splendid, far-sighted, public spirited. His interest in this matter as in many others is peculiarly unselfish. He can gain nothing except the chance to spend a lot of money. The consciousness of patriotic service must be his reward. He has it and it's a fine reward.

TOO MUCH PRESS AGENTRY

RECENT evidences are plain that one of the things needful in the aircraft industry is conservatism in publicity. As the business expands there will be a continually increased need of solid truth rather than evanescent dreams. In the minds of the public, if not in those of the industry's individuals, the day of romance has passed for the business of flight, just as in time it passed for the business of railroading, the business of telephoning and (more recently) the business of radio.

The American man on the street is beginning to demand hard facts rather than wild and beautiful dreams. The superlative has been used too much. Possible accomplishments which never have been crystalized into actuality have been too common.

Every time the fertile imagination of a press agent creates a castle-in-Spain that never becomes a real building in America, the industry is injured. America has very little use for anything which it cannot take seriously. Even honest-to-goodness stunts have ceased to be of value; threatened stunts which fail, perhaps disastrously, do harm. If the people of the United States could be astonished by some unexpected accomplishments instead of being constantly distressed and shocked by unexpected failures there would be a better immediate prospect for the development of aeronautics here. A wild hurrah that comes to nothing is the celebration of a bubble pricked. The American aircraft industry needs to be extremely careful lest people gain the general idea that the whole air idea is nothing greater than a bubble which is likely to be pricked.

AERO DIGEST would be the last to suggest that America should stop striving to do the undoable, attain the unattainable, stun the world with wonders. It is American to do those things. But it is not American to talk about them first and afterwards try unsuccessfully to do them. Less efficiency in advance conversation, more efficiency in advance preparation for big achievements in what is needed in this young and energetic industry.

What, for example, could so utterly astound the world as a transatlantic flight of which the first news was that of the triumphant descent of an American plane on one of Europe's landing fields?

A NOD AND A WINK

At a Naval Matrimonial Expert, Sex and Aerobatics, Harvard, and Other Sweet and Gentle Topics

By

Cy Caldwell

YOU six readers may have been wondering how such an august personage as a Rear Admiral in the great United States Navy puts in his time. Perhaps you have pictured him leaning over a desk on which is spread a map of this country, conferring with other admirals, both rear and front variety, and figuring out what to do if anyone attacks the place by sea. If you've pictured him in that attitude, it shows how ingenuous you are; and I'm surprised at your credulity and innocence.

That's not what he's doing at all. Take Rear Admiral Charles P. Plunkett, Commander of the New York Navy Yard, for example. What does he do with himself? Well, the other day he spoke at the convention of the New York City Federation of Women's Clubs in the Hotel Astor. He was right there with the women talking about divorce. Yes, sir, he just let the defense of the country slide for the moment and told those girls that the stage and the motion pictures were causing an amazing rise in divorce figures in recent years. The divorce problem, he said, according to the *Times*, will "rip this country wide open if we can't answer it."

He wasn't concerned about any enemy ripping the country wide open with airplane bombs, or anything like that. The danger to this country, as Rear Admiral Plunkett sees it, is that divorce will rip the country wide open. No wonder they've made him Rear Admiral—and the further to the rear the better for the country.

"The stage is going down so fast," said the Navy's divorce expert in his talk to the ladies, "that if something is not done soon to stop its decline nothing can be done." Now, it's a funny thing, but I feel about the same way regarding the Navy. I've been trying to indicate in these columns what might be done with aircraft to keep the Navy from going down, but nobody in the Navy pays any attention to me. They haven't time, apparently, what with the admirals having their mind on the degeneracy of the stage and the prevalence of divorce and one thing or another in national life. Well, I haven't been in the Navy, and I haven't been divorced, so of course the admirals have at least one up on me.

The Rear Admiral referred to his attempt to stop the play, "What Price Glory?" by Laurence Stallings. "That play," he said, "was the vilest piece of pacifist propaganda ever put forth. It said to every mother in the country: 'Don't let your son go to war. You think he's fighting, but see what he's really doing.'"

And of course he wasn't doing it at all. How does a man like Laurence Stallings, who was badly wounded in the war, know what the soldiers were doing? He was too busy fighting and getting wounded to see what anyone was doing. If you want to know what the boys were doing, ask Rear Admiral Plunkett—if you can get him away from the Women's Club long enough for him to answer.

But I agree with the Admiral that these plays depicting our brave boys lolling in the arms of them furrin wimmen and drinking vin rouge are all wrong. The boys never did it. And such diaries as "War Birds" are all wrong. The idea of even suggesting that our intrepid birdmen fooled around with the gals and drank wine! It makes my blood boil almost as hot as the tea that Rear Admiral Plunkett and the ladies doubtless lapped up at their meeting. And I think it's about time that one of us birdmen came forward to refute these calumnies and tell what actually occurred.

Now, I was a birdman in that war, ladies—I hope this thing gets to that Women's Club that the Rear Admiral goes to—and I want to give you a true picture of an aviator surrounded by wine and women, and resisting them nobly. On Armistice Day I went into a café in London, merely to study social conditions—that's all I went for. The room was crowded with men and women drinking—I shudder to write the word, ladies—and being—well, somewhat promiscuous, we might say. One of the girls jumped up, ran over to me with a glass of wine—or it might have been Scotch—in her hand, and cried, "Hooray! Kiss me, big boy!"

Well, I just looked at her. But what a dirty look I gave her! Then I said to her, "Woman! Lips that touch liquor shall never touch mine!" Then I turned away with dignity, and threw myself into the arms of a passing Y. M. C. A. secretary. We burst into tears and cried ourselves to sleep at the awfulness of it all.

Now, there is what Rear Admiral Plunkett would doubtless back me up in calling, "True picture of an aviator in the war." I hope he would, anyhow. I have a wife, a bull-dog, a three-roomed flat, and cockroaches in the kitchen—I'm a standard New Yorker—and I don't want these authors to shake anyone's confidence in my purity while I was at the war. Why, if anyone even suspected—I mean, if anyone thought for a moment that I played around while I was Over There, why I'd be ashamed to look one of those innocent little cockroaches in the face.

But to return to Rear Admiral Plunkett. He said that he never attended a motion picture performance "because it doesn't improve my mind." Well, we mustn't expect the movies to perform impossibilities.

THEY'RE still hunting for that French pilot who executed a series of daring aerobatics right over the roof of a girls' seminary in a little town in the Vosges Mountains. It is supposed that he was enamored of one of the fair inmates. Likely enough.

Well, of course, that's an idiotic trick, stunting around over the roofs, endangering the lives of people below. But I'm still young enough to have a sneaking hope that they don't find that pilot. For I know what was the matter with him: the same thing that was the matter with Tom Sawyer when the new girl moved to town, and that made him turn hand-springs and cart-wheels before her house; the same thing that was the matter with me, a great many years ago, when I used to torture an old FE2b into agonized attitudes above the dwelling of a certain fair one in a little English village—to the delight of the fair one and the consterpation of the older and uglier residents. To-day, of course, I have deteriorated sufficiently to shudder when I think of the fool antics I went through, and the risk to which I offered my carcase, for such an ephemeral reward as an adoring glance from a pair of eyes that I still recall were blue. . . .

(*Continued on page 474*)

STINSON—DETROITERS' RECORD

By Samuel K. Holland, Jr.

Pilot Billy Brock and John Duval Dodge after their trip to the West Coast in a Stinson-Detroiter

POSITIVE evidence that commercial aviation is here to stay and that airlines can be made as sure and safe as any railroad has been given in the records achieved in the past five months by the Stinson Aircraft Corporation.

With the recent sales of cabin jobs to the United States Department of Commerce, the Patricia Airways and Exploration Company, Ltd., and the Marmon Motor Company of Indianapolis, the Stinson Company has established enviable sales and performance precedents. When the Marmon ship is delivered, 20 Stinson-Detroiters will be in the hands of airlines, business corporations and private owners.

So far, Stinson-Detroiters have flown approximately nine times the distance around the world without an accident despite the fact that every one of them has gone adventuring since they left the factory. For instance, two ships are being used by Captain George Hubert Wilkins on his quest for undiscovered lands at the North Pole. Another owned by the Florida Airways Corporation was the first vehicle to enter Miami following the devastating hurricane of last year, carrying the largest cash shipment ever made by an airplane—$2,000,000 from the Federal Reserve Bank at Atlanta to the stricken institutions in the storm center.

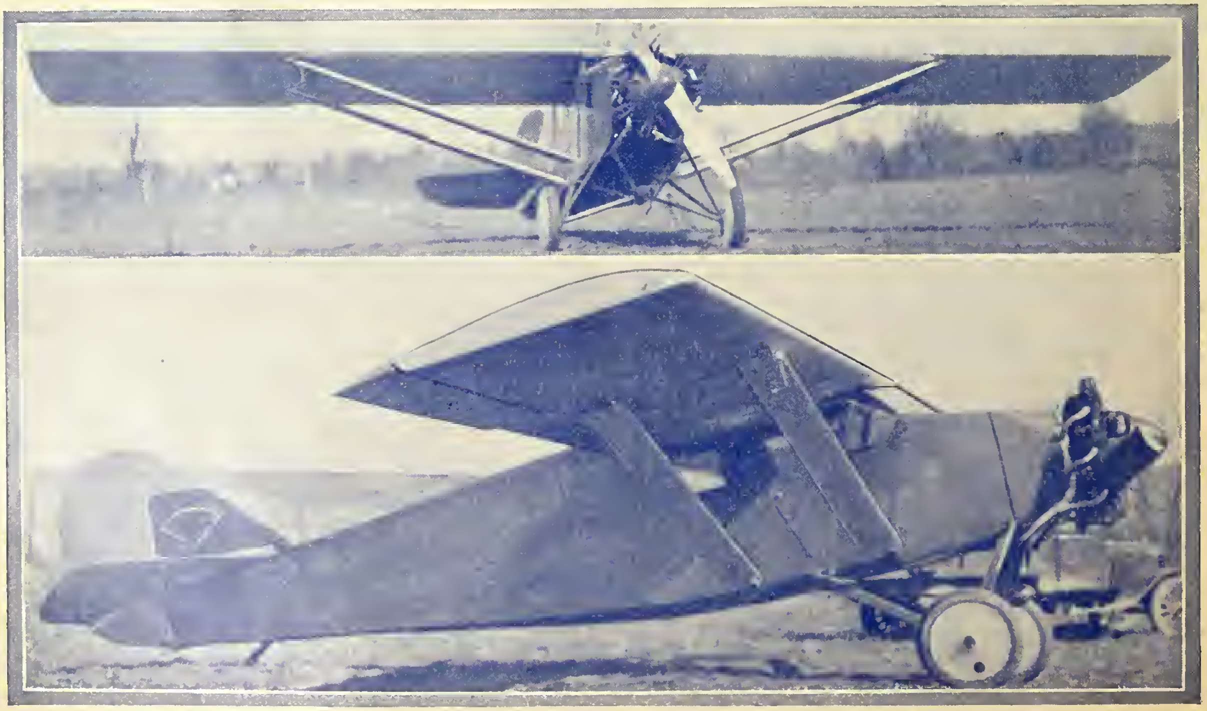
Still another feather in the Detroiter's cap is the record flight recently completed by John Duval Dodge in his personal Stinson-Detroiter. Young Dodge, with his pilot, Billy Brock, started out with his Stinson-Detroiter in February to spend a day in South Bend, Ind. They were to return within 24 hours.

Two days later, Dodge wired from Kansas City that he was having so much fun he guessed maybe he wouldn't return so soon. During the following week telegrams, notes and postal cards began trickling in from Oklahoma City, Dallas, Houston, Yuma, San Antonio, Juarez, and, finally, a series of inquiries poured into the Stinson factory from prospects in Los Angeles which showed that Dodge's seven-league boots had at last come to at least a temporary halt.

After spending several weeks in Los Angeles, Dodge returned to Detroit by air without once being troubled by the plane. The flight consumed more than 7,000 miles. It was the longest pleasure jaunt on aeronautical record. The average time of the trip was exactly 100 miles an hour.

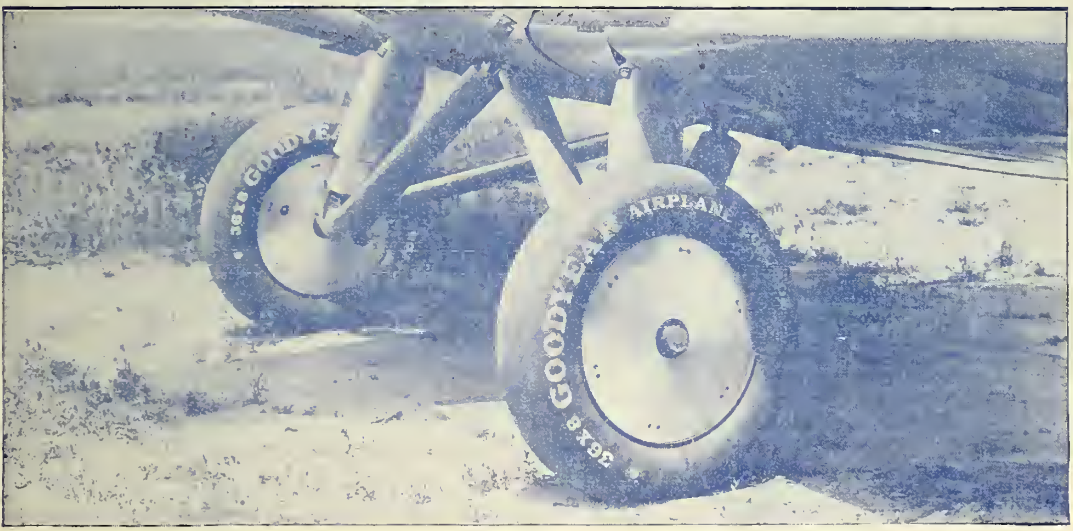
Not long ago a group of Detroit business men who jointly own a Stinson-Detroiter flew from their Michigan city to Dunedin, Florida, a distance of 900 miles, in 8 hours and 30 minutes.

And to show how the cost of such travel has been reduced, young Dodge said his unusual trip was less expensive than a similar trip by automobile and train, while



The new Stinson experimental monoplane which will be on display at the All-American Aircraft Show in Washington

THE DOUBLE DUTY OF TIRES



THE opened throttle commands airplane tires to be fleet and nimble, to spin easily and swiftly as the ship hurries into flight.

And then, the journey over, these same tires must bear speeding weight and human life to safety as the plane strikes ground again. Thus, in every flight Goodyear Airplane Tires reveal their agility and their strength. These tires assist take-off performance because they are perfectly balanced and hold their proper pressures. They withstand the punishment of fast or awkward landing because they are built of finest materials by men who know how important tires are to safety.

Goodyear Airplane Tires are offered by an organization that wants aviation to prosper. Goodyear makes everything in rubber for the airplane.

Aeronautics Department
THE GOODYEAR TIRE & RUBBER COMPANY, INC., AKRON, OHIO

GOODYEAR

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AIRPLANE TIRES

Edward A. Stinson

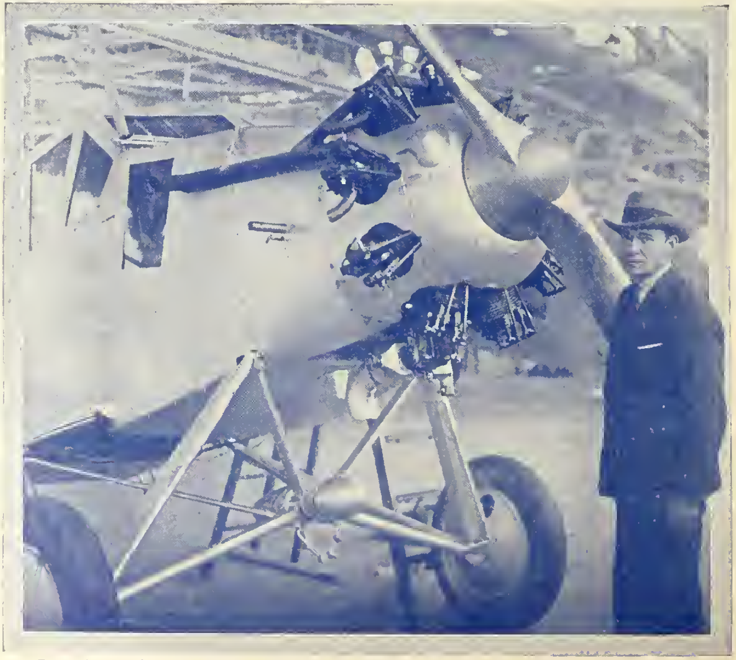
William A. Mara

Austin F. Bement, well known advertising man, who flew a Detroiter from Detroit to Chicago to Peoria, Ill., and return, declared his trip, including depreciation on the plane and all incidental expenses, was only $6 higher than the railroad fare and that he saved three business days by using his airplane.

Another adventuring Detroiter is the one in service in the far-away gold fields of Red Lake, Ontario, linking the camps with the railroad. Detroiters are carrying the mail, too. Three of these enclosed and heated ships have been flying over 800 miles a day on the North West Airways which operates between St. Paul and Chicago with mail, passengers and freight.

Other useful purposes to which Stinson-Detroiters have been put lately were in the business of Edward F. Schlee, president of the Wayco Oil Corporation, who has flown his plane more than 25,000 miles on business and pleasure; Horace E. Dodge, president of the Dodge Boat Works, who has flown more than 30,000 miles on business and pleasure; R. C. "Cliff" Durant, famous automobile racer and financier, who commutes from his farm at Roscommon, Michigan, to Detroit, Chicago and other large cities where he has interests. His plane also will carry him from track to track during the 1927 racing season.

Frank W. Blair, president of the Union Trust Company; Newton W. Skillman, president of the O & S Bearing Company; Carl H. Keller, president of the Contractors' Equipment Company; Charles B. Bohn, president of the Bohn Aluminum & Brass Corporation; William B. Stout, general manager of the Stout Airplane Division of the Ford Motor Company; Edward S. Evans, president of the E. S. Evans Corporation, who is joint holder of the round-the-world record, and Austin F. Bement, president of the Austin F. Bement, Inc., are also users of Stinson-Detroiters. These men find the airplane saves them hundreds of dollars every month in time and traveling expenses.



Captain Wilkins and one of the two Stinson-Detroiters now in Alaska

The planes are of the latest type of design and make a high speed of 125 miles an hour and cruise at 105. The cabin ships will carry four passengers in addition to 300 pounds of baggage or freight. The Stinson-Detroiter was the first plane to include brakes on the wheels, starter on the motor, and a completely enclosed sound-proof heated cabin. The brakes will bring the plane to a stop within 100 feet, so that the ship may be landed on very small fields. The starter on the motor enables one man to start the motor and take-off without any assistance.

The cabin is as comfortable and as tastefully upholstered as the tonneau of a luxurious automobile. There is ample leg room for all passengers and pilot, while the lazy-back seat, padded with Marshall springs, are beautifully covered with chrome leather. The 8 windows to the cabin allow a good vision to passengers and pilot. It is equipped with dual control for relief pilots on long flights, and also to simplify the training of student aviators.

The ship is staunchly constructed. Steel tubing tested to withstand the tremendous strain is used throughout the fuselage. The wings are built from solid duralumin ribs and heavy spruce spars reinforced with steel. The motor is mounted on steel brackets. The landing gear is also of steel reinforced from every possible angle to ensure safety. It is so well balanced that it has been flown from Cleveland to Detroit and from Detroit to Grand Rapids—more than 300 miles—without the pilot once touching the stabilizing controls. Once in the air the ship will fly herself, a kick on the rudder bar now and then to get direction being all that is necessary for the pilot to fly her.

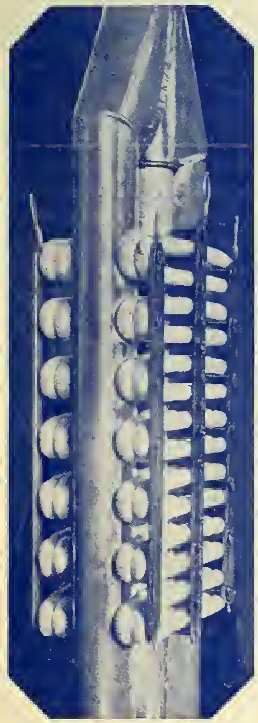
It is so designed that no matter how rough the weather the pilot may put it in a stall — nose straight up, tail perpendicular—with the motor throttled and remove both hands and feet from the controls without endangering either ship or passengers. In this position it will neither go into a spin nor slip off on a wing, but will describe a graceful arch and assume a gliding position which it will maintain until landed.

When this performance is carried through, the Detroiter has a gliding angle with a 10 to 1

(*Contd. on p. 486*)

RUSCO

SHOCK ABSORBER RINGS



A high safety factor. In the Fokker Tri-Motor Transport landing gear shown above 10% of the rings can be broken by accident or hard landings and enough strength will be left to effect a safe landing.

THE landing gear of the Fokker Tri-Motor Transports are equipped with RUSCO ENDLESS SHOCK ABSORBER RINGS. Simplicity of construction and the principle of multiple individual units offer distinct advantages.

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A booklet describing the several types will be sent on request.

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THE NEXT PARADE

(Concluded from the April Issue)

By

James Warner Bellah

THE O. C. Mineola stood smoking on the Tarmac. Beyond him in the darkness, his thirty-four pursuit planes were lined up and ready. It was one-thirty by the luminous dial of his wrist watch. He lit a cigarette from the butt between his lips and the smoke whipped away in the wind. There was a sound of crunching gravel just behind him.

"Worst war we've had since midnight. What's the latest?"

He turned. "Fifteen or twenty minutes now at the most. They'll be lower than we thought. Weather. We'll take twenty to twenty-two thousand feet for the roof and be safe. They know damn well that their blind calculations will have been shot to hell by the distance they've come. They'll want to *see*. That's why they'll come low. Wait a minute. Get this."

Someone was running toward them in the darkness. "Right, Sir. They're passing over the scout ships and destroyers."

"Quicker'n I thought," said the O. C. "Ready, Major?"

"Right."

"Hop off!"

The Major saluted. "See you for breakfast."

The O. C. ran forward to his machine. All down the line of hangars motors barked into life with little spitting coughs that sank quickly to a full-throated roaring. The O. C. climbed into his cockpit and groped for his belt. "Notify corps," he shouted to his runner, "that we've hopped off."

There was a moment while he revved his motor and throttled it. A moment while he shouted for his chocks to be pulled—then the green of a Very light burst high above his machine, and the machine bolted forward into the trail of the green sparks. He groped for his pistol rack and jammed the brass signal gun into it, then he switched on his running lights and presently, on the third bounce, hoicked his ship into the air and leveled it over the tree tops.

"Close in," he bawled into his microphone. "I'm throttling — *climb together*." He touched his throttle with a careful finger and stared back into the darkness. Thirty-four planes with winking eyes of green and red—red and green.

Below him there was nothing but black space—black, crawling emptiness to be protected. Thirty-four ships to do it with. His lips pulled back into an ugly grin——a devil smirk in the green light smudge of his instrument board. He ruddered west by a shade south, and called his course into the mike—"Climb!"

It lacked five minutes of 2 a.m. by his chronometer. Over the padded cowl of his tiny office he could see the whitish wash of the shore line and the vague silver of the rivers and the Upper Bay. Fine. That'll hold for eight or ten thousand feet. The altimeter gave him six thousand now. He looked down again into the crawling blackness below. Thousands of people off there to starboard, lying in gutters. People who had killed themselves by their own folly. He shrugged. Not his business if people were fools. Behind him the Pursuit Group was fanned out in two wedges with every ship reported present, and the motors ticking over beautifully. Thirty-four men who were *not* fools but who might as well have been fools as to die for someone else's foolishness.

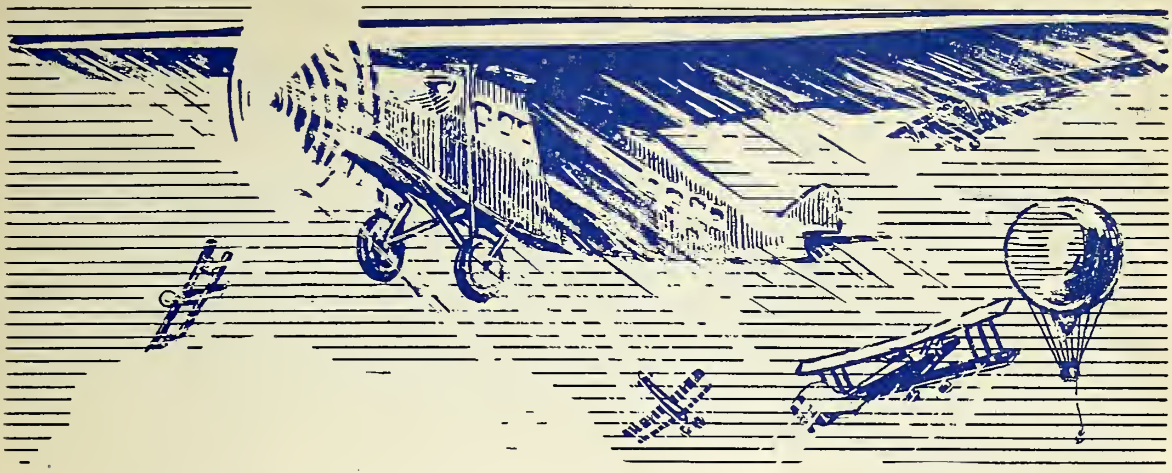
His altimeter gave him between fifteen and sixteen thousand and it was taking much longer to climb the needle through the hundred foot marks. His nose wobbled slightly and he had to rudder continually to keep it pointed.

Up and up—until presently the needle shivered slowly across the 22,000 mark. He signalled for the two formations to close in and change direction to due south. He felt along the joy stick until his finger touched his machine gun controls. He pulled them for a burst of ten, to warm them up. They stuttered into life and chattered for a moment above the throaty drone of his motor. It was two twenty-five by his watch.

He started intently into the void below and in front of him. Five minutes—ten. He glanced to port and starboard for his flank machines. Nothing

(*Cont'd on p. 388*)

"The truncated jaggedness of the lower skyline gaped starkly against the gray sky."



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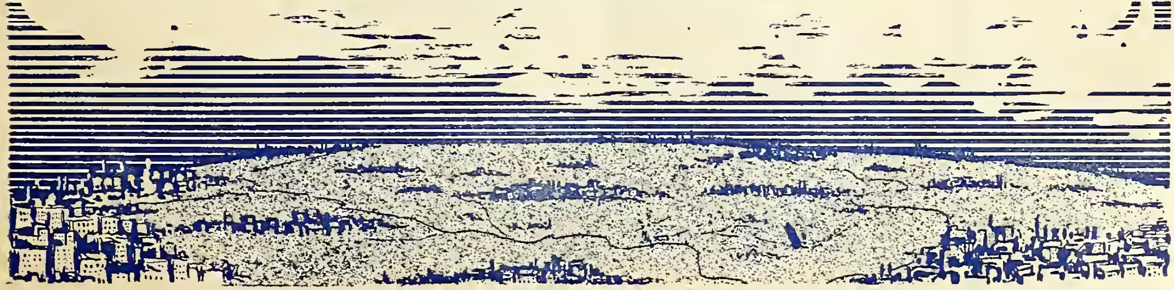

Then suddenly out of the darkness there came the cold needle of a searchlight—and another—and another. Groping, probing fingers of white fire, lacing the under sides of the clouds and turning their tops into moon glow. Sandy Hook. His teeth snapped shut and his fingers closed on the stock of his brass signal pistol.

He froze suddenly and whipped it out. One ray of light below him had splashed and splayed onto something black. Four yellow smudges blossomed suddenly around the shape. He held the Very pistol overside and fired. The red ball arched away from his ship and spit a thousand trailing sparks. He threw his joy stick forward and dove for the yellow bursts—and presently his cramped fingers closed over his machine gun controls and the guns snickered cruelly at the black shape below. His tiny ship trembled pitifully with the dive, but he held it in, until the wire-scream cut his ear drums. And again he fired and followed the thin light trail of his tracer bullets——followed it and shifted it until it bit into the enemy machine, like a rapier thrust home.

A moment—he snubbed his throttle and pulled out of the dive with a wrench at the joy stick—pulled out and side-slipped left, to get away from the red inferno he had caused. And as he pulled away there was a frightful back-blast that turned him into a split-air turn and bounced him end over, away from the hurtling splinters and the kicking legs that had been an enemy bus until the bullets from his guns had torn the heart out of it.

P. & A. Photos.

"Already there were new patrols to take the place of the ones that had passed with the night before."

He lost a thousand feet before he got under control again. On three sides of him there were long, torn ribbons of flame streaking for the floor. Someone else had got hits. Four out of two thousand have pyorrhea! He pulled back his stick and climbed, with his guns fanning into another black hulk above him. The joy of the thing now—the hopeless joy of it! A line of tracer bullets slashed at him in a stream of magnesium light and raked across his port wing—he saw them go through, leaving little red smouldering gashes in the fabric. The times he'd been robbed for dinners and drinks in this New York below and behind him!

He pulled back and stalled his tiny ship, still firing into the black, clumsy shape above him. His bus whipped off and his stomach closed with the suddenness of it. There was a place on 46th St——

Off to starboard another burst of flame—one of his own men this time. Smaller.

Damned searchlights! Why don't they concentrate so we can see? And again he was climbing and firing until his fingers ached with the pressure on the triggers. Get up on top and come down again. Keep at 'em, barking at their heels—throw 'em off New York!

Another stream of tracer bullets cut across his path. He dove under them. They followed him. He side-slipped left and pulled up into a stall. They were under him now. He split-aired around and fired at right angles into the place the bullets started from. They stopped—and red light sprayed again from the place they had come from. He kept on firing until it was all red light in front of him. But he pulled away too late. As he struck, he tried to rise in his seat. *Belt.* He flipped the safety catch. His feet wouldn't hold him. Something wrong with his feet and knees. He grabbed the side of his bucking cockpit and jerked himself up. *Damn.* Head and shoulder over. Wires. And then a rush of cold, gagging air in his face——

Hours later his hand found the 'chute ring and pulled it. Presently the thing jerked him amidships and snapped his legs until he screamed into the empty night with the pain of it. "That place on 46th Street. Not to-night Jos——"

His face was smeared with blood from his nose. I got four. Four times thirty-four. Pretty good. He looked up and swung easily on his parachute rigging. In four places the sky was on fire. I suppose Congress will give us an appropriation to-morrow or else court-martial us for losing the ships——

The fire in the sky above him shot past him miles away. In the quiet, the could still hear the far roar of the motors and the faint spitting of the guns. Someone was still hanging on. If it only throws them off the track, so they miss the city itself. We were over Lower Bay. Suddenly he looked down. Blackness—too black for water. He dipped the front edge of his 'chute and swung with the drop. It was much warmer. He called out. There was a faint shout to answer him and then, in a rush, he struck, and fainted with the pain in his legs.

"All right, Buddy."

Men were crowding around him cutting away the rigging and tripping in the snarled strands. "Sure. First New Jersey Cavalry. You're three miles from Harrison. How many? We counted forty in flames, ours and theirs. They're still fighting but they've passed out to sea, I guess. *Sure* they bombed. Tore the meadows to hell. Gas too. They got parts of Brooklyn and lower N'Yawk, so they say, and a lot of 'em have got inland. But it's all right now for awhile. Watch them legs of his. Here 'yare. Rush this car through the bridges to Number Three

(*Continued on page 483*)

Fairchild have created a new cabin monoplane. Quite the finest machine in its class. The pilot's seat has been placed into the cabin. Powered with the Wright 200 H. P. "Whirlwind", it is the most serviceable plane for the transport of passengers and express goods. Extreme stability and spontaneous response to the controls make the Fairchild Monoplane easy to handle and a pleasure to fly. The cabin provides seating accommodation for four passengers and the pilot. The total laden weight is 3225 lbs., of which 760 lbs. is available for passengers and freight. Maximum speed 124 miles per hour approximately. Wing span 44 ft., or 12 ft. when folded. Write us about your aerial problem, Fairchild facilities are at your disposal.

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FLIGHT TRAINING

Training Conditions, the Course of Training and the Instructor

Third Article of a Series

By

Lieutenant Barrett Studley, U.S.N.

IN the preceding article it was stated that there are four factors involved in flight training, namely (1) the student himself; (2) training conditions; (3) the course of training; and (4) the instructor. The first of these has already been considered. The remaining three will be discussed in the present article.

Under training conditions are included the plane, the flying field and various other physical factors. Instruction should always be taken in a training plane rather than a service plane. The essential characteristics for instruction purposes are low landing speed and good maneuverability. A plane of not over 200 h. p., of moderate size and landing at not over 40 miles an hour, is required. It must be equipped with dual controls, or controls in each of the two cockpits interconnected so that the plane may be handled by either the student or the instructor.

For landplane training a field of good size, preferably not less than half a mile in the direction of the wind, is required. The approaches must be fairly clear, as obstacles would be likely to distract the student's attention. It is also necessary to consider the surrounding area from the viewpoint of a possible forced landing, now an infrequent but not yet an impossible contingency. No great precision can be expected from a solo student in case of motor failure, and consequently it is essential that a sufficient number of open fields be available. So long as he can reach a comparatively clear space at any time, engine failure should never entail more than minor damage to the wings, landing gear or propeller.

A three-point landing with a typical training plane, the Consolidated NY1.

Instruction can be given effectively only under suitable weather conditions. It is not necessary to wait for clear and quiet days. But wind in excess of twenty miles an hour, rain, very low clouds or thick haze would interfere with the student's progress.

The third factor, the course of training, requires the most careful attention of every prospective student. A misconception has arisen in this regard and seems to have gained somewhat wide credence. Ten hours of dual instruction are sufficient to enable a student of normal aptitude to solo with safety. But they do not make a pilot of him. Any assumption that they do is entirely erroneous. A man is just as much a student when he steps out of a plane after his first solo as he was at the beginning of his training.

The reason for this statement may be made clearer by a moment's consideration of what is implied by the term pilot. The meaning of that term has expanded greatly with the growth of aviation. Once it was a feat to stay in the air for a few minutes. But that time has long passed, and a take-off, a few moderate turns and a safe landing no longer constitute a remarkable achievement. A modern pilot must be able to handle his plane capably under all circumstances. This means that, at the very least, he must be proficient in reverse control turns and spirals and in precision landings, both with and without power. Instruction in these maneuvers cannot be given effectively prior to completion of 15 to 25 hours of solo.

But there is then no question as to whether or not a student wants to learn them. He must learn them before he can be considered a pilot in the modern sense of the word.

It is an undoubted fact that the dual instruc-

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Curtiss training seaplane making a full stall landing.

tion of many competent pilots flying today was limited to ten hours or less. This does not mean however that they never received training in advanced maneuvers. They trained themselves. But the fact that they did so is by no means proof that this is the best way of doing it. Self-instruction has in all professions been long ago superseded by the more effective methods of modern training schools. And adequate training is of particular importance in the field of aviation on account of the requirements of safety. Advanced maneuvers can be learned with no risk whatever under the guidance of a competent instructor. But there is by no means the same assurance when they are self-taught. A really comprehensive course of flight training includes advanced instruction.

The following typical course of training is based on the past performance of students. It includes all instruction essential to make a competent pilot.

Elementary Flying

1. Ten hours dual instruction in the following maneuvers in the order listed: Taxying, straight flying, turns, take-offs, landings, spirals, approaches, stalls and spins.
2. Fifteen hours solo practice of above maneuvers, with check flights with the instructor after each five hours.

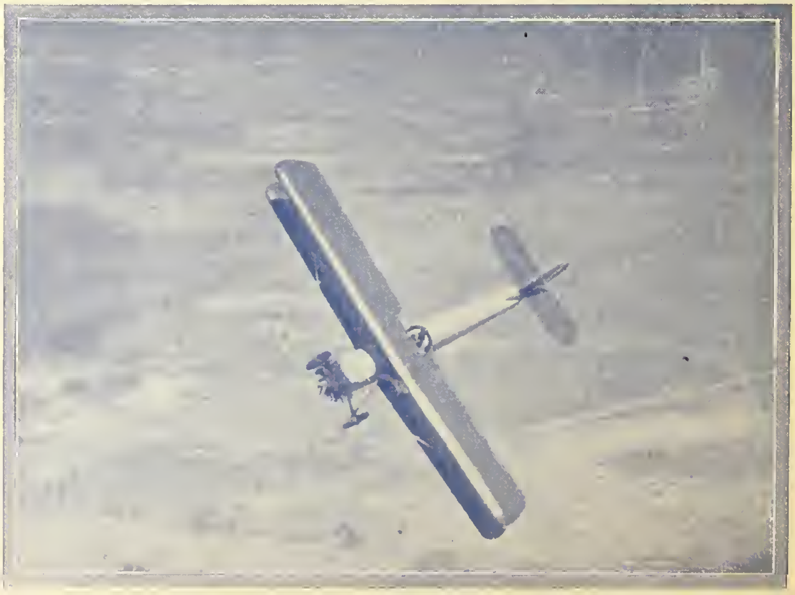
Advanced Flying

1. Instruction in and fifteen hours solo practice of: Reverse control turns and spirals, acrobatics, precision landings with power, forced landings, cross-country flying.

All of the maneuvers included under Elementary Flying are essential. None may be safely omitted. Space does not permit a full analysis here of the normal instruction rate nor of methods of instruction. But these have all been worked out on the basis of past experience and are familiar to experienced instructors. It is generally realized that careful organization of instruction is necessary in order to insure first, that new maneuvers are introduced when the student is ready for them but not before he is, and second, that nothing of importance is omitted. Planning of all flights is also essential if full value is to be derived from each one. But when training is thus carried on an accurate estimate of the student's progress in comparison with the average can be made.

A word may be said here concerning landing instruction to illustrate the possibilities of systematic organization. This maneuver is ordinarily the most difficult to learn and therefore requires the most attention. Instruction is broken up into steps in order to permit the student to concentrate on only a few things at a time. One of the most useful devices which has been developed for this purpose is the "slow motion" landing. A normal landing is made with such rapidity that accurate analysis of its elements is impossible for the beginner. But when the throttle, instead of being entirely closed, is left open sufficiently to maintain approximately 1,000 r.p.m., the plane settles more gradually and the landing is slowed down to one-third or one-quarter of normal speed. The longer time gives the student a proportionately greater opportunity to familiarize himself with the elements involved. The effect is similar to that of slow motion pictures in which movement too rapid for the naked eye can readily be analyzed. Half an hour's practice of slow motion landings will ordinarily give the student some idea of the factors involved and thus enable him to direct his efforts more intelligently during his subsequent attempts at normal landings.

Specific training to insure the safety of the student during solo is a vital part of any well-planned course. It is particularly important that instruction in forced landings and in the avoidance of spins be included. The prompt and accurate action needed in case of motor failure can be taken only after the student has been prepared for this contingency by repeated practice. But after adequate drilling an actual forced landing can involve no risk whatever for a competent solo student. Practice in the avoidance of spins is equally essential. Recovery from a few actual spins should be effected by the student. But the greatest emphasis should be put on recognition of the incipient stages of a spin, threatened either by stalling or by serious skidding, and on (*Continued on page 488*)



Position of a training plane while making a reverse control or "flipper turn."

Fokker Triple-Engined Plane in service of Philadelphia Rapid Transit Company, equipped with Goodrich Tires.

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Goodrich Ring-Type Shock Absorbers

For maximum safety. Multiple strands of tough rubber compressed into a double woven casing. If one ring breaks the landing gear is protected by the other rings and only the broken ones need to be replaced.

"LEARN TO FLY"

(Continued from the April issue)

Flight Training Opportunities Offered in the United States

ROBERTSON AVIATION SCHOOL

Lambert—St. Louis Airport, Anglum, Mo.

IN the April issue the tuition of the Primary Course was listed as $400. This was a typographical error, the cost of this course being $100. At the completion of this Primary Course the student is allowed to solo one of the company's ships. Instruction in spinning and recovery from spins is included.

The Supplementary Course, $55, consists of three and one-half hours of instruction and solo, and is compiled as a finishing course for those students who have completed the Primary Course, but do not wish to take the Intermediate Course. This course includes acrobatics and is really a condensed Intermediate Course.

The Intermediate Course, $100, consists of six hours of dual instruction and solo under supervision. The average student can qualify for his F.A.I. pilot's certificate and annual license during this course.

The Advanced Course, $150, consists of five hours instruction and solo in cross-country and acrobatics, and includes one hour instruction in Orioles and a half-hour's instruction in air mail DeHavillands.

The Combined Course, $300, including Primary, Intermediate and Advanced Courses, constitutes one of the most complete flying courses offered. It requires a minimum of about 30 days, but may be extended over a longer period advantageously, since the student is given an opportunity to learn the complete overhaul, care and maintenance of both airplane and engine in addition to the flying training.

The time required to complete the flying instruction varies with the courses taken, the individual, and the weather. The Primary course requires an average of two weeks and the Intermediate and Advanced courses about one week each.

The April issue of AERO DIGEST contains additional details on the Robertson School.

CURTISS FLYING SCHOOL

Curtiss Field, Garden City, L. I., N. Y.

THE average cost of instruction is $300. Additional instruction supplied at $30 per hour, or a plane for solo practice at $25 per hour. The instruction consists of: Ten hours' actual flying instruction in the air; practical mechanical experience; information on nomenclature, aerodynamics, navigation, instruments, etc.; advanced instruction such as tail-spins, cross-wind and side-slip landings, cross-country flying. Course takes 3 to 4 weeks. Diploma given and opportunity to take official F.A.I. tests for pilot's license.

The school has been operating since 1919. It is a continuation of the old Curtiss Flying School organized by Mr. Glenn H. Curtiss at Hammondsport under the name of Curtiss Exhibition Company in 1911 and which was discontinued during the war period.

Students get accommodations at local boarding houses in neighboring villages at a cost of $12 per week and up.

Five OX-motored JNs are used.

An average of ten students take the course at a time. Four instructors are employed.

455 students have been trained since starting. 95 graduated in 1926. No accidents or injuries.

Curtiss Field is completely equipped with permanent hangars and repair and maintenance shops manned by competent personnel. The Curtiss Flying Service's fleet of sixteen modern planes operates from this field the whole year round, flying practically every day. At the Curtiss factory nearby an opportunity is given to see the latest types of both commercial and military airplanes and motors in the process of being built.

SAN DIEGO FLYING SCHOOL

San Diego, California

A COMPLETE course in student training, including motor and plane maintenance, if desired, is given for $200. Air instruction is also given at the rate of $15 an hour. Motor and plane work consists of actual work of overhauling and rebuilding planes and motors, along with regular text book instruction.

This school has been operating since 1922.

Good living facilities are obtainable within two blocks of the field.

Three rebuilt JN4D Curtiss training ships, besides the company's regular passenger planes, are used. Two instructors are employed; 27 students are now training; 217 students have trained and soloed since the school was started.

The field is eighty acres of grass-covered turf, located within the City of San Diego on Barnett Avenue, opposite the U. S. Marine Base. Street car service, running directly past the field, takes one to the center of town in about 10 minutes.

Regular commercial flying service is also offered by the San Diego Airport company.

SHOCKLEY FLYING SCHOOL

Kokomo, Indiana

INSTRUCTION consists of motor work, rigging, meteorology, cross-country and eighteen hours of flying at a cost of $250.

The school opened in July, 1926. Two students have completed the course.

Room and board may be obtained near the field for $8 per week.

Two OX5 Standards are used for instruction; one instructor.

Shockley flying field is one mile south of Kokomo. It comprises 60 acres of level land, office, gas and oil supply equipment and 60-foot circle in center of field.

A commercial flying service is also conducted by Shockley. *(Cont'd on page 396)*

A group of students and instructors of the Curtiss Flying School, Curtiss Field, Garden City L. I., N. Y.

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CAMPBELL-DESCHEPPER FLYING SCHOOL

Moline, Illinois

FLYING and ground instruction is given for $20 per hour. The school has been operating for the past four years, and at the present time has sixteen ships on the field, consisting of Jennies, Standards, Wacos, Swallows, Travel Airs, Thomas Morse and others. These ships are powered with OX5s, OX6s, Whirlwinds and Liberty motors, thereby affording a student the opportunity of familiarizing himself with practically all the popular type commercial ships as well as motors.

In the past four years 26 students have soloed. In addition to these, there have been at least 50 students who, because of limited finances, have been unable to complete the course. Although the school does not specialize in flight training, it gives a thorough course for students who are seriously considering entering aviation as a future source of livelihood.

The field is located three miles south of Moline and five miles from Davenport and Rock Island respectively, and consists of 83 acres. The Campbell-DeSchepper Airplane Co. sells planes and supplies and operates an aerial service.

RINEHART-WHELAN FLYING SCHOOL

Dayton, Ohio

GROUND instruction and ten hours flying are offered at the cost of $250. The school has been operating for four years.

Five ships are used of the following types:—JN, Standard and Dayton-Wright "Chummy."

Four students are being trained now; forty-five have graduated. Two instructors are employed.

Living facilities may be obtained adjacent to the field.

Moraine Flying Field, the home of the school, is the Dayton Municipal Airport.

The Rinehart-Whelan Company, which operates the school, builds and rebuilds planes and conducts a commercial flying service.

CHICAGO FLYING CLUB

Chicago, Illinois

THIS is a non-profit club giving instruction at cost. All surplus goes into more flying equipment for the members. The fees are $50 initiation fee, $5 monthly dues, and $3.50 per twenty minute lesson. Assuming ten hours of instruction over a period of two months the cost would be: Initiation, $50; dues for two months, $10; instruction, ten hours, $105. Total, $165. Students completing the course pay $1.75 per twenty minutes solo.

Instruction consists of regular flying instruction, including landings, solo, Immelmans, loops and figure eights.

The club has been operating under the above system for about two years.

There are no living facilities on field for students but there is good transportation to the city.

Three ships are used—Canucks and Jennies. A new King Bird is on order and will be delivered soon.

Sixty members of the club are taking the course; three have completed the entire course and nine are in the final stages. There are three instructors.

The ground of the flying field is covered with heavy sod and is tile drained. The location is northwest of Chicago on Irving Park Boulevard and one-half mile west of the River Road. This field is directly on the Northwest Airway Mail Route.

Moraine Flying Field, home of the Rinehart-Whelan Flying School

NICHOLAS-BEAZLEY FLYING SCHOOL

Marshall, Missouri

THE average cost of instruction is from $150 to $160. Instruction consist of complete theoretical and practical knowledge of care, repair and maintenance of a ship and motor; rigging, doping, covering and general experience in the building of a plane; approximately ten hours' dual instruction, one hour solo flight; cross-country flying, stunting and forced landing experience.

The school has been operating for three years.

Students can obtain room and board for about $8 per week at Marshall, a town of 7,000 inhabitants.

Six ships are used: Jennies, Canucks, Standards, new production ships which the company builds, Hisso Standards, OX and OXX Standards, the Nicholas Beazley shortwing Standard, Waco 9s and the company's new NB-1 which is soon to be put in production—a three-place OX5 job equipped with dual controls.

Over 300 students have been trained in the past three years. Two instructors are employed at all times, sometimes three.

The field is located one mile from town on a concrete highway. It is about 70 acres, four-way, L-shaped, with a 2,000-foot runway north and south and a 1,600-foot runway east and west. It is equipped with a repair shop; supplies; telephone; and a hangar which holds four ships.

The Nicholas-Beazley Airplane Company, which operates the school, builds, repairs, and distributes planes and parts.

WILLARD PARKER FLYING SCHOOL

Cleveland, Ohio

THE tuition rates are $250 cash, $285 time payment, for the primary flying course, which qualifies for Private license as outlined in the Commercial Air Regulations. Advance course, $150 cash, $185 time payment, which qualifies for Transport or Industrial licenses excepting the flying hours credit and the physical tests.

This school has been conducting business for four years.

Rooms are obtained for any out of town students on request.

Five planes will be used for instructions this year, all using OX5 motors excepting one which is a fast scout using an Aeromarine 200 h.p. engine for advance training.

Fifty students are enrolled at the present time and three instructors are employed.

The school has soloed fifty-eight students, all taking a thorough course in theory and practical work.

The field used by the school is 1800 acres in size, completely drained and lighted. This field is owned by the city.

The Willard Parker Flyers also specialize in commercial flying.

(*Cont. on page* 398)

This picture was snapped at the Wichita Airport, while D. C. Warren of San Francisco was talking to Walter Beech, President of Travel Air Mfg. Co. The two planes, an OX-5 Travel Air and a Whirlwind Travel Air Monoplane, were later flown to California, the OX-5 for Mr. Warren's use as a demonstrator and the monoplane for Pacific Air Transport (their 6th Travel Air).

"Now, Beech, here is why I Chose Travel Air"—

(D. C. Warren speaking)

"I wanted to take over the distribution of some real airplane in the Pacific States. I wanted it to be the best ship I could find, with a high reputation, and priced fairly. Having satisfied myself of the way you build them by seeing them built, and having put them through every test I knew in the air; then, seeing this OX-5 job perform as it did, carrying an *extra load equal to its own weight*, there is only one kind for me to handle—TRAVEL AIR."

Besides having all the accepted and most modern construction details as well as many which are exclusive with Travel Air, the newer models have many refinements and advantages, among which are:

Greater cruising range
Upholstered cockpit
More convenient controls
Lock attachment for stick, holding ailerons rigid when on the ground.

Mr. Warren is now our Pacific Coast Distributor, with headquarters in San Francisco (1803 Van Ness Avenue).

This OX-5 Travel Air carried the following load on the weight-carrying test mentioned above:

Pilot	170 pounds
Gas, 10 gallons .	60 pounds
Oil, 5 gallons ...	40 pounds
Sand	1030 pounds
Total load	1300 pounds

(equal to the ship's weight)

You may have our catalog by merely writing for it.

TRAVEL AIR MFG. CO., INC.

Factory and General Offices WICHITA, KANSAS

Training planes at the Heath Flying School field, Chicago, Illinois.

PITCAIRN FLYING SCHOOL

Hallowell, Pennsylvania

THE cost of instruction is $275 for 10 hours, or $30 per hour.

If a Pitcairn plane is bought at any time within a year after receiving instruction at Pitcairn Field an allowance of ten dollars per hour for each hour of instruction paid for, up to a maximum of $150, will be granted.

Instruction includes: courses in aeronautical nomenclature, elementary aerodynamics, principles of aircraft design, construction and care of aircraft engines, aerial navigation, meteorology, and air law.

Ten hours of flying instruction, taken within a period of from six weeks to two months, will give a student a fundamental idea of how a plane is operated. At its conclusion he will be competent to take a plane from the ground, fly it properly under reasonably good weather conditions, and bring it safely back to earth. He will also be able to execute the "stunts" that are essential to full control of the plane. This flying instruction together with the course, as outlined above, will enable students to pass the Department of Commerce examination for a license as a Private pilot. Additional experience to obtain the Industrial and Transport pilot licenses may be acquired in the students own plane or in planes rented from the company.

The school has been operating in its present location about 15 months, previous to that at Bryn Athyn, for a year.

Living facilities for students are available in the immediate neighborhood of the field at $12 to $15 per week.

Ten ships are available—principally Pitcairn Orowings.

Thirty students are at present registered; 3 instructors; 73 students were trained in 1926.

The Pitcairn Flying School is located on the Easton Road or Doylestown Pike, at Hallowell, Pa., about three miles above Willow Grove. The total area of the flying field is about 300 acres; it lies high, is flat and well drained, and is surrounded by excellent flying country. Its equipment includes the hangar for storing the Pitcairn planes, and a second hangar devoted to storage space for other planes using the field. Complete shops are attached to both hangars. There is an office and reception room, and a well equipped lunch-room on the field.

Pitcairn Aviation, Inc., designers and manufacturers of airplanes and operators of a commercial flying service, have been awarded the contract to carry mail between New York and Atlanta, Georgia. Their main office is located in Philadelphia; the factory at Bryn Athyn, Pennsylvania.

HEATH FLYING SCHOOL

Chicago, Illinois

THE chief courses are: Five weeks' day course with 3½ hours actual flying—fee, $100; three months' day course with 8 hours of flying—fee, $190; evening course with 4 months' shop instruction and 5 hours flying—fee, $175; three months' evening course—fee, $100.

Students taking the day course are offered an opportunity to earn a small amount each week for overtime work in the company's shop before and after class hours; and their student welfare department can make employment arrangements, for a small additional charge, for those desiring to be employed during the day and earn the balance of the tuition fee. The employment will be in the line of work that the student is best fitted for.

Flying lessons are 20 minutes in duration. Shop work consists of building new ships, repairing and rebuilding ships, making propellers, overhauling motors, etc. No theoretical instruction is given. Everything is practical. Shop work is taught in a completely equipped machine shop.

The school has been in operation for 17 years, with the exception of the few years during the war when the Government prohibited commercial flying, or almost did so.

Good rooms for students are found in the immediate neighborhood of the shop, which is located in one of the city's old residential neighborhoods, for about $4 per week.

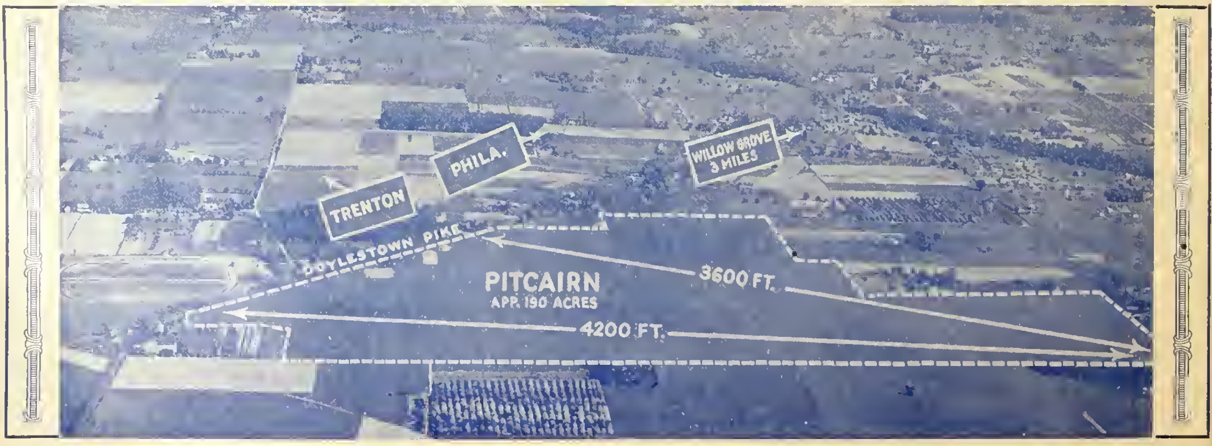
OX5 Standards are used exclusively for training, but at the end of the course, if the student has soloed, he is given an opportunity to fly Jennies and other types of ships. Three Standards are used for student work, two of them in operation and one in reserve. Flying is done every day of the week, weather permitting.

At present there are 35 students, with two instructors.

The flying field is located at River and Touhy Roads, two miles west of Park Ridge and 22 miles from the shop and office. It is about 80 acres in area with good approaches, gas station, lunch room and telephone at field. Motor bus service connects with Chicago street cars. The airport is within a 30-minute motor car ride from the factory and school, which are situated in the heart of the city. Transportation to and from field is furnished to students; two of the company's automobiles make trips twice a day.

The Heath Airplane Company, operating the school, have been in the aircraft business for over eighteen years, manufacturing planes and parts, rebuilding and overhauling motors and maintaining an aeronautical supply house.

(*The synopses of flying schools will be continued in the June issue of* AERO DIGEST.)



Pitcairn Flying Field, situated in Montgomery County, near Philadelphia, Pa., is surrounded by excellent flying country.

AIRPLANES

MOST all of the Standard J1 airplanes (numbering 452) were concentrated at Camp Logan, Houston, Texas. We were fortunate in purchasing half of these Standards and from time to time have shipped them up to our St. Louis warehouse in carload lots.

These airplanes were constructed during the war period. All were brand new in original crates, but we have taken them out of the crates and rebuilt the fuselages from nose to tail installing all new longerons, instrument boards, new seats, new landing gears, etc. We also reconstruct the wings and give them a thorough inspection and recover the entire ship with new fabric. We use six coats of freshly manufactured Nitrate dope, and the entire ship has the natural color finish. The aluminum cowls are painted a light blue, and this combination makes a very neat appearing ship. All of our airplanes are constructed in such a way that we guarantee them to pass the Government test. Each airplane is carefully inspected and given a severe test flight before we make delivery.

We invite you to come to St. Louis and go through our shops. We feel sure you will agree with the rest of our customers who have gone through our shops that this is the only company in the country which is actually rebuilding Standard airplanes as they should be built.

We sold 83 of these Standards last year, and a large percentage of them were powered with the OX5 motor. All of the fuselages are reconditioned so as to accommodate two passengers in the front seat and a pilot in the rear. The Standard airplane with OX5 motor installed will carry one passenger in the front seat and a pilot in the rear; with the Curtiss OXX6 100 h. p. motor, the Hispano Suiza 150 h. p. motor or the Curtiss K-6 motor of 150 h. p. the ship will carry two passengers in the front seat and a pilot in the rear.

NEW STANDARD J1 AIRPLANES

without motor; fuselage and tail members uncovered	$650
completely covered, set up, but without motor	750
with Government overhauled OX5 motor installed, 2-place ship—(our best seller)	900
with absolutely new OX5 motor installed	1200
with brand new Curtiss OXX6 100 h.p. motor, 3-place	1300
with Government overhauled OXX6 100 h.p. motor 3-place	1200
with guaranteed overhauled Model A Hispano Suiza 150 h.p. motor, 3-place ship	1350
with guaranteed overhauled model I, 150 h.p. Hispano Suiza motor installed, 3-place	1500
with guaranteed overhauled Model E, 180 h.p. Hispano Suiza motor installed, 3-place	1500

We have a few used Standard J1 airplanes with motors at $650 ready to fly away in good airworthy condition.

NEW CURTISS ORIOLES

3-place, without motor	$1750
with Curtiss K-6 motor 150 h.p. installed, 3-place	2000
with practically new Hispano Suiza model E, 180 h.p. motor installed, 3-place	2000

DE HAVILLANDS

Completely reconditioned, wings and tail members recovered, less motor	$1000
with guaranteed overhauled Liberty motor	3000
with brand new Liberty motor	7500

THOMAS-MORSE AND SPAD SCOUTS

TM Scout, complete with new 80 h.p. Le-Rhone motor installed	$650
TM, Complete with 0X5 motor	1000
Spad scout, (which we consider much better than the TM, or TM Scout, as it has better performance, and is constructed much better) less motor	200

These Spad airplanes are fast single seater scout planes. They are in good condition but need recovering. Some of the wings need minor repairs. To close these out we are selling them at what they cost us. The motor mounting is for the 150 h.p. Hispano Suiza motor, but can be changed over to accommodate the OX5 motor planes crated f.o.b. cars at our warehouse at San Antonio, Texas.

CURTISS JN AIRPLANES

Reconditioned JN4D, with guaranteed overhauled OX5 motor	$750
without motor	500
with Hispano Suiza motor installed	1250
Reconditioned and recovered Canuck, with guaranteed overhauled OX5 motor	900
with brand new OX5 motor installed	1200
Special built Canuck with all lower wings finished in pigmented aluminum, blue cowls, that flew about 20 hours, a bargain at	1000

Write for free catalogue of our Flying School

ROBERTSON AIRCRAFT CORPORATION

OPERATORS OF UNITED STATES AIR MAIL ST. LOUIS - CHICAGO

LAMBERT-ST. LOUIS FLYING FIELD, ANGLUM, MO.

The All America Aircraft Display, Washington, D. C.

COINCIDENTLY with the meetings of the Third Pan-American Commercial Conference which will convene at Washington May 2nd, 3rd, 4th and 5th, the Inter-American Commission on Commercial Aviation will hold a series of meetings and aeronautical exhibits. The sessions will be in the general interest of international aviation and more especially to consider the development and regulation of commercial aviation between all the republics of the Western Hemisphere. The Commission will meet in accordance with a resolution of the Governing Board of the Pan-American Union.

To attend these meetings the Aeronautical Chamber of Commerce has appointed the following delegates:

Col. Paul Henderson, president, Aeronautical Chamber of Commerce of America, and general manager, National Air Transport, Inc., Chicago, Ill.

Major Gen. John F. O'Ryan, president, Colonial Air Transport, New York City.

Harold F. Pitcairn, president, Pitcairn Aviation, Inc., Philadelphia, Pa.

In connection with the Aeronautical Convention an "All American Aircraft Show" will be run for the benefit of the many foreign delegates which are expected to attend. The show will be held at Bolling Field and includes not only exhibitions of various kinds but also an extended flying program, under the auspices of the Aeronautical Chamber of Commerce with C. G. Peterson as managing director. The flying exhibition will be in special charge of Willard W. Gatchell.

Among the novel features of the show it is planned to invite railroad executives to witness practical demonstrations of how the airplane can be used to best advantage in combination with railroad service. Also a special flying exhibition will be staged during the afternoon of Thursday, May 5th, for the benefit of members of the United States Chamber of Commerce which will be holding its annual session in Washington during that week. Tuesday afternoon, May 3rd and Wednesday morning, May 4th, have been set aside for informal meetings for the discussion of international rules and regulations pertaining to flying between the various countries belonging to the Pan-American Union.

A list of the exhibitors that have to date entered for the All America Aircraft Show follows:

Airplanes

Advance Aircraft Co., Troy, Ohio.
Atlantic Aircraft Corp., Hasbrouck Heights, N. J. (A. H. G. Fokker).
Boeing Airplane Co., Seattle, Wash. (George Tidmarsh).
Buhl Aircraft Corp., Marysville, Mich. (Louis G. Meister).
Canadian Vickers Ltd., Montreal, Canada (H. H. Germain).
Consolidated Aircraft Corp., Buffalo, N. Y. (Col. V. E. Clark).
Douglas Company, Santa Monica, Calif.
Fairchild Aeroplane & Mfg. Co., N. Y. C.
Ford Motor Company, Dearborn, Mich.
Hamilton Metalplane Co., Milwaukee, Wisc. (Thos. F. Hamilton).
Hess Aircraft Co., Detroit, Mich.
Johnson Airplane & Supply Co., Dayton, O.
Keystone Aircraft Corp., Bristol, Pa. (Edgar N. Gott).
Loening Aero. Engineering Corp., N. Y. C.
Glenn L. Martin Co., Cleveland, O.
Ryan Airlines, Inc., San Diego, Cal.
Chance Vought Corp., N. Y. C.
Sikorsky Aero Eng. Corp., N. Y. C.
Stinson Aircraft Corp., Northville, Mich. (Ed. Stinson, Wm. Mara).
Travel Air, Inc., Wichita, Kansas (Walter Beech).

Airplane Engines

Curtiss Aeroplane & Motor Corp., Garden City, L. I., N. Y. (Frank Russell).
Packard Motor Car Co., Detroit, Mich. (Mr. Brodie).
Pratt & Whitney, Hartford, Conn.
Wright Aeronautical Corp., Paterson, N. J. (Edward Mulligan).

Airplane Accessories

Aero Supply Co., College Point, N. Y. C. (Mr. Stick).
Airships, Inc., Hammondsport, N. Y. (J. Lansing Callan).
Bendix Brake Co., South Bend, Ind.
B. F. Goodrich Rubber Co., Akron, Ohio (Mr. H. Wacker).
Irving Air Chute Co., Buffalo, N. Y.
Macwhyte Co., Kenosha, Wisc. (T. M. Mills).
Russell Parachute Co., San Diego, Calif. (Mr. Russell).
Russell Mfg. Co., Middletown, Conn.
Sauzedde Corp., Detroit, Mich. (Ralph R. Owen).
Standard Steel Propeller Co., Pittsburgh, Pa. (Harry Kraeling).

Engine Accessories

Allison Engineering Co., Indianapolis, Ind.
Detroit Air Appliance Corp., Detroit, Mich. (H. V. Wilkie).
Eclipse Machine Co., Hoboken, N. J. (A. E. Raabe).
Norma Hoffmann Bearings Corp., Stamford, Conn.
National Steel Products Co., Dayton, Ohio (J. G. Lehman).
S K F Industries, N. Y. C.
A. C. Spark Plug Co., Flint, Mich.
Splitdorf Electric Co., Newark, N. J.
Stromberg Motor Devices Co., N. Y. C. (L. A. Brady).

Electrical

Acme Wire Company, New Haven, Conn. (Mr. Davis).
B. B. T. Corp. of America, Philadelphia, Pa. (E. Leret).
B. G. Corporation, N. Y. C. (Sidney G. Harris).
Herbert Bucklen Corp., Elkhart, Ind. (A. R. Grundel).
Electric Storage Battery Co., Philadelphia, Pa. (L. E. Leighton).
General Electric Co., Schenectady, N. Y. (H. C. Ritchie).
Leece Neville Co., Cleveland, Ohio (Arthur A. Skinner).
Claude Neon Lights, New York, N. Y.
Pioneer Instrument Co., Brooklyn, N. Y. (C. H. Colvin).
Scintilla Magneto Co., Inc., Sidney, N. Y. (T. Z. Fagan).
Sperry Gyroscope Company, B'klyn, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa. (Ph. Grunnagle).

Material and Supplies

Aluminum Co. of America, Pittsburgh, Pa.
Berry Bros., Detroit, Mich. (T. B. Cobby).
Haskelite Mfg. Corp., Chicago, Ill. (A. E. Bustard).
Perry Austin Mfg. Co., Inc., Staten Island, N. Y. (Mr. Perry).
V. G. Posey, Hoquian, Wash.
John A. Roebling's Sons Co., Trenton, N. J.
E. S. Twining & Co., N. Y. C.
Vellumoid Co., Boston, Mass. (W. W. Webster).

Miscellaneous

Aircraft Development Corp., Detroit, Mich. (Carl B. Fritche).
American Oil Company, Baltimore, Md.
A. Black, Engineering Services, Garden City, N. Y.
Eberhart Aeroplane & Motor Co., Buffalo, N. Y.
National Air Transport Co., Chicago, Ill.
Payne Export & Import Co., N. Y. C.
Southern Dusting Co., Inc., Tallulah, Ia. (Eugene Stevens).
A. G. Spaulding & Bros., N. Y. C. (H. Hart).
Vacuum Oil Co., N. Y. C. (Mr. Umlauf).
E. B. Meyrowitz, Inc., N. Y. C.

Magazines

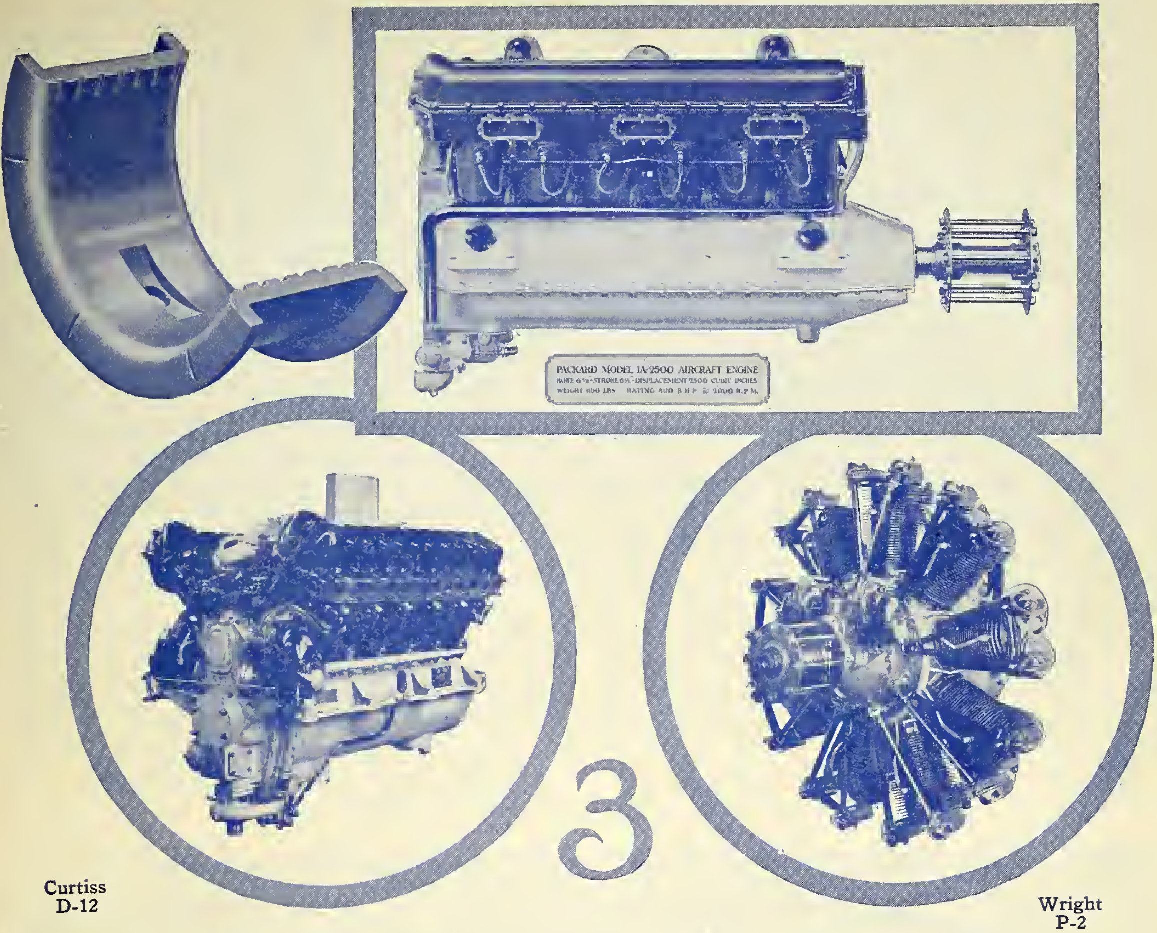
AERO DIGEST, N. Y. C. (Frank A. Tichenor).
Aviation, N. Y. C. (L. Gardner).
Slipstream, Dayton, Ohio (F. W. Marshall).
U. S. Air Service, Washington, D. C.

Government Exhibitors

U. S. Army Air Corps.
U. S. Navy.
U. S. Weather Bureau.
U. S. Bureau of Entomology.
U. S. Forestry Service.
U. S. Coast & Geodetic Survey.
U. S. Post Office Department.
U. S. Geological Survey.
U. S. Department of Commerce.
U. S. Coast Guard.

Delegates to Inter-American Commercial Aeronautical Commission.

Argentina: Felipe A. Espil, Major Angel M. Zuloaga.
Bolivia: Alberto Palacios.
Colombia: Enrique Olaya, Peter P. Von Bauer.
Costa Rica: J. Rafael Oreamuno, Guillermo E. Gonzalez.
Cuba: Gonzalo Guell, Capt. Enrique A. Prieto.
Dominican Republic: Maximo L. Vasquez, Enrique Valverde.
Mexico: Juan Guillermo Villasana, Lic. Jose Vanzquez Santaella, Francisco Suastegui.
Panama: Dr. Ricardo J. Alfaro.
Peru: Juan Leguia, Alfredo Gonzalez Prada.
Venezuela: Dr. Carlos F. Grisanti, Luis Churion.
Salvador: Leonilo Montalvo.
Uruguay: Hugo V. de Pena.
United States: Wm. P. MacCracken, Jr., Harry F. Guggenheim, John Lansing Callan.



Great Airplane Engine Manufacturers have accepted Ring True Bearings as Standard

BESIDES supplying BOHN Ring True bronze-back babbitt-lined bearings to most of the manufacturers of automobiles in the country — Ring True bearings have been accepted as standard by these three outstanding aircraft engine manufacturers.

BOHN PRODUCTS include Ring True Bearings, interchangeable and standard type, bronze, babbitt-lined—BOHNALITE castings, both permanent mold and sand—NELSON BOHNALITE Pistons—we also manufacture replacement bearings and pistons for the Liberty Motor.

BOHN ALUMINUM & BRASS CORPORATION

EAST GRAND BOULEVARD. DETROIT

UNITED STATES' AIRPLANES and ENGINES

By George F. McLaughlin

IN the following pages a pictorial resumé is made of representative airplanes and engines being built in the United States at the present time.

Of the commercial types the attempt has been made to classify only such as are intended for production and to be available to the general public.

Biplanes predominate as far as numbers are concerned and with few exceptions they are of the single-bay type. Of the thirty-four commercial types shown in the illustrations on these pages, eighteen use the "N"-strut wing bracing, two the single strut with widened ends to embrace both wing-spars, and only one is equipped with "V-struts." Twelve types illustrated use the old fore and aft inter-strut wire bracing, while only one, the "Arrow" has adopted the strutless, full cantilever wing.

The center section, which lends itself so well to enclosure of a gravity fuel tank is still in favor in most cases, but the double tripod construction which eliminates many wires has not become as popular with designers as was predicted some years ago. It is more widely used on military machines than on commercial types.

Landing gear practice is about evenly divided between the old fashioned through axle and the divided landing gear construction. The advantages of the latter type in keeping free from weeds and the absence of wires is largely counter-balanced by the simpler and less expensive construction and maintenance of the latter.

Tubular steel fuselage construction is predominant.

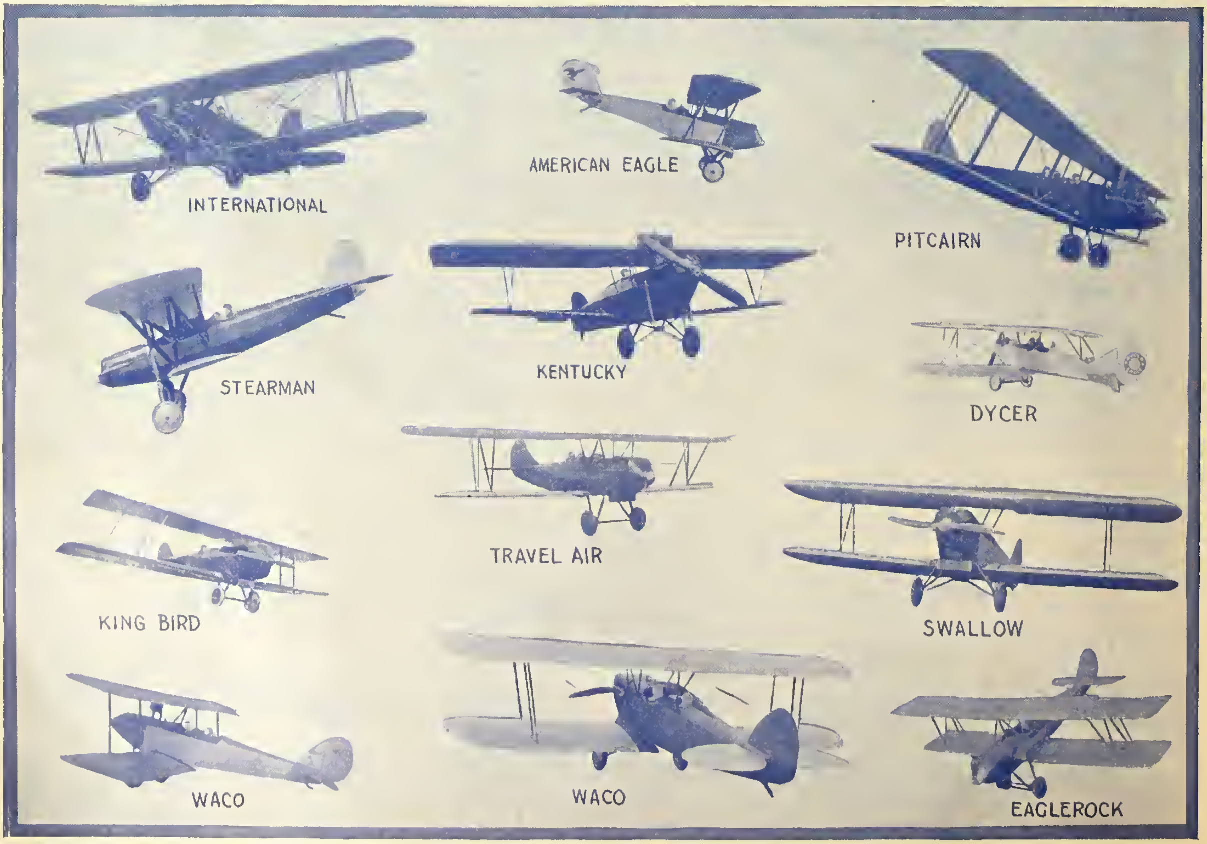
The group depicted on this page shows a number of ships which have been specially designed around the Curtiss OX5 and OXX6 engines which are still much in favor with designers. This is due, of course, to their low initial cost and also because no other motor has been made available in commercial quantities to take their place as regards power and performance.

It is interesting to note the graceful lines that have been developed around a motor which does not normally lend itself well to the efficient treatment of cowlings.

The American tendency in general is towards the use of a single motor, and concentration on the improvement of the power plant for reliability. In only a few cases are more than one motor used, such as in the tri-motored Sikorsky, carrying eighteen passengers, the Fokker F7 and the Ford all-metal monoplane which carry twelve and eight passengers respectively. Only one twin-motor ship is shown; the Johnson commercial and touring plane built to carry four passengers with two Bristol "Cherub" engines.

Folding wings have been adopted by Buhl, Fairchild, and Driggs; their advantages are too well known to be enumerated here.

Each year we see an increase in the use of various devices that add to the convenience of pilots and passengers: engine self starters of various types, wheel brakes and like improvements are today supplied by the manufacturers as standard equipment and not as independent additions. Provision is now often made for their incorporation in the original design, and thereby their proper maintenance and functioning is insured at all times.



The Curtiss OX5 and OXX6 engines are used to power this representative group of American commercial biplanes.

If we analyze the views of monoplanes on page 404 we note the wide divergences in size which range from the huge Fokker and Ford machines to the sport planes of Heath and Brown. With the exception of the latter two all monoplanes have enclosed cabins, a feature to which the characteristics of monoplane construction lend themselves particularly well, with a wing that has to be kept fairly high off the ground and a fuselage which must be necessarily deep to insure proper bracing of the diagonal struts.

All types of motors, water cooled and air cooled, vertical, vee and radial types have been adopted by American designers.

In wing construction, the general tendency is to discard the full single cantilever wing. While it offers undoubted advantages from an aerodynamic point of view, it is generally too difficult and cumbersome to transport. Dividing the wing makes the adoption of diagonal side struts imperative, the more so when motors are suspended from the wing, as done by Fokker and Ford.

The struts are usually of the non-lifting type with the exception of Stinson's and Bellanca's monoplanes, who add an aerofoil shaped extension to the struts, giving some additional lift, and by the action of their pronounced dihedral aid materially to the maintenance of lateral stability.

It is gratifying to note that the regulations imposed by the Department of Commerce have borne good fruit and that designers now not only follow but often exceed the letter of the regulations in matters pertaining to safety. Designs of commercial ships show that as much thought and care is expended on them as were formerly employed only under rigid Army and Navy inspection. Copies of old war type planes have practically disappeared from the market and designers have supplanted them with modern types designed and built purely for commercial purposes.

A complete list of American commercial airplanes appears on page 405. This table shows at a glance the characteristics of each type as well as the brief specifications relating to each.

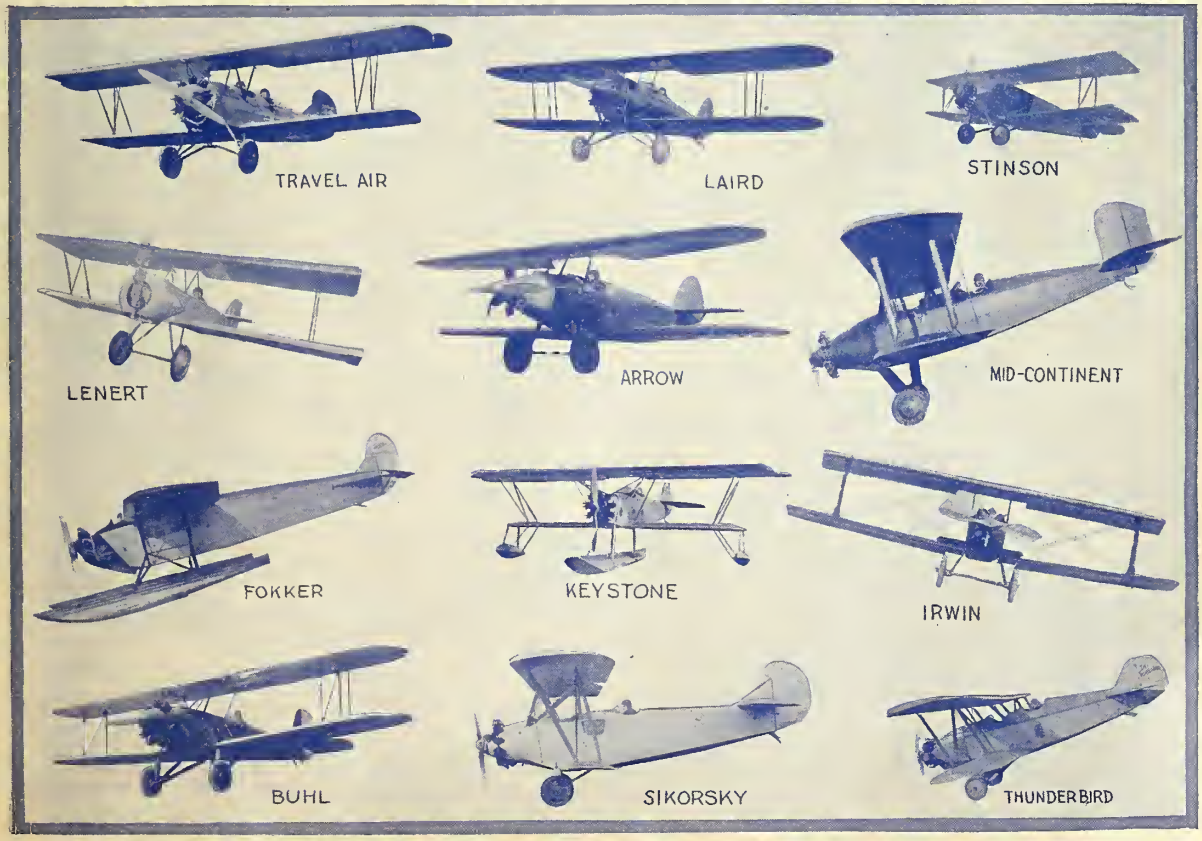
Some of the types of training airplanes designed primarily for military training are now also produced for private training. Such types under this classification are those manufactured by the Consolidated Company and the Curtiss Company.

ENGINE PROGRESS

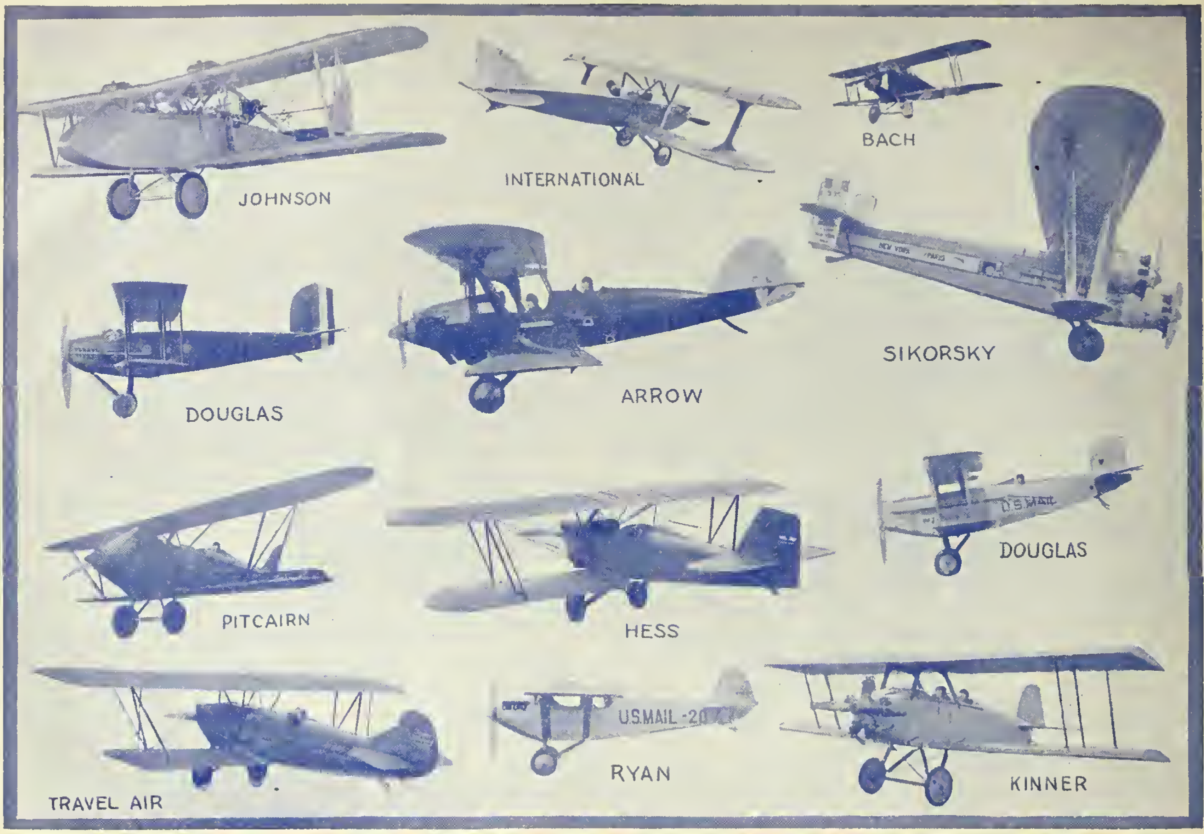
On page 407 is given a table of characteristics of the leading American aircraft engines, together with illustrations of the most representative types.

In reviewing recent progress we note the development to practical perfection of several features which at first sight appear revolutionary. As examples we cite the inverted Packard engine, which grew out of the McCook Field experiments with inverted Liberty's and also the 4-cylinder air-cooled Fairchild-Caminez crankless engine, both of which would have been considered as decidedly freakish only a few years ago.

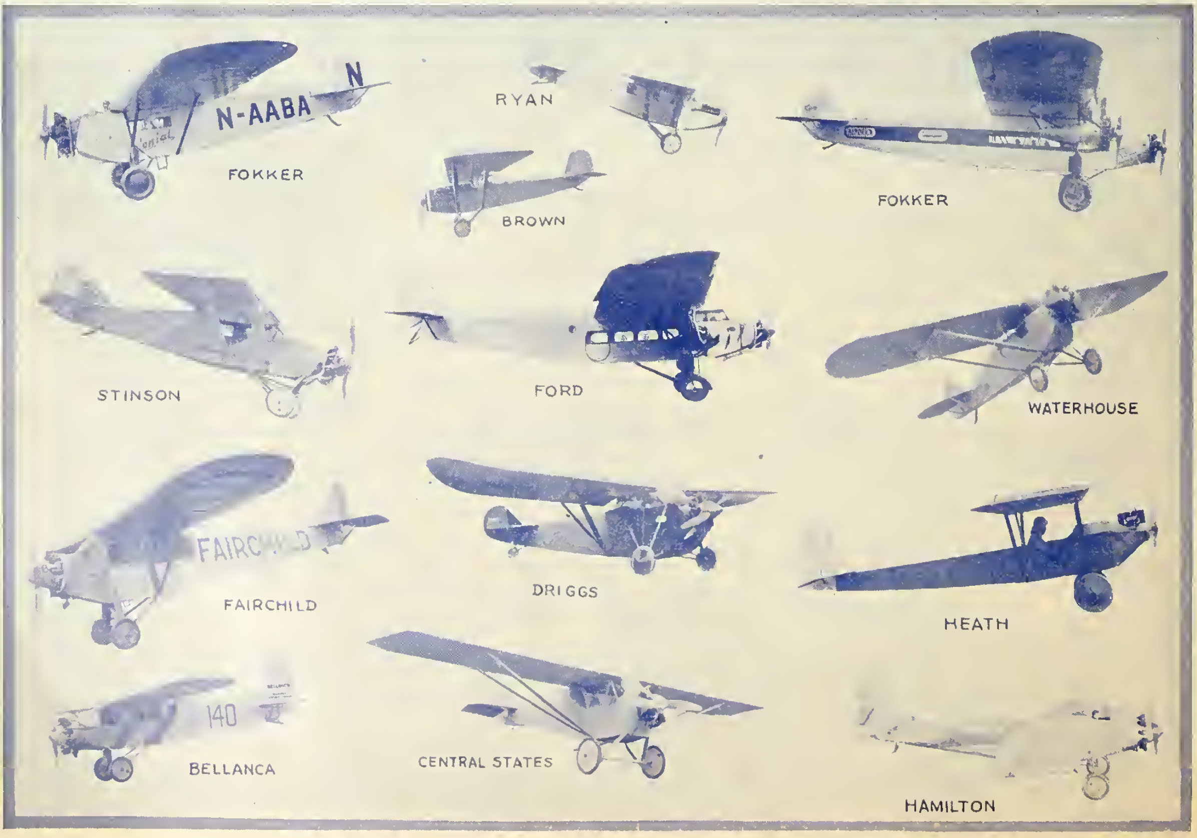
Air cooled engines have concentrated on the radial type and some of the most noteworthy flights of the past year have been made with those power plants. Among the most outstanding advancements in the art of building air cooled engines is the Pratt & Whitney "Hornet," which recently gained the highest praise from the Navy Department for successfully passing a rigid fifty-hour test.



A group of American commercial airplanes of various types powered with radial air-cooled engines.

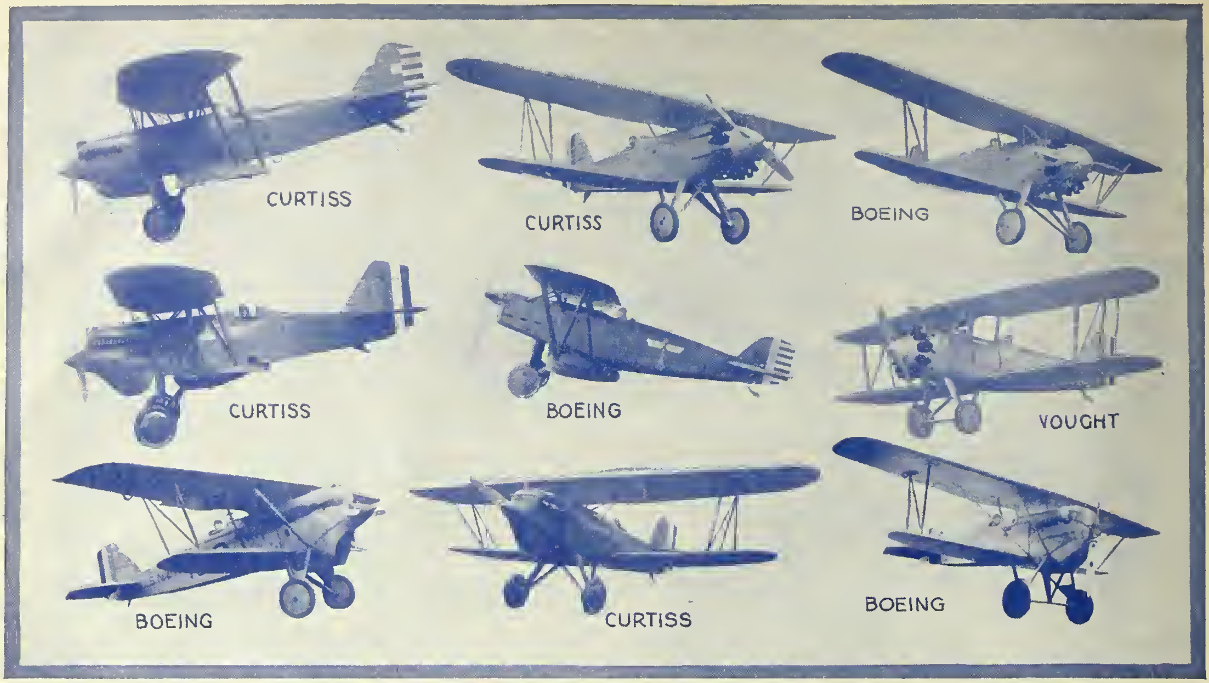


AIRPLANES OF AMERICAN MANUFACTURE USED IN VARIOUS BRANCHES OF COMMERCIAL SERVICE.



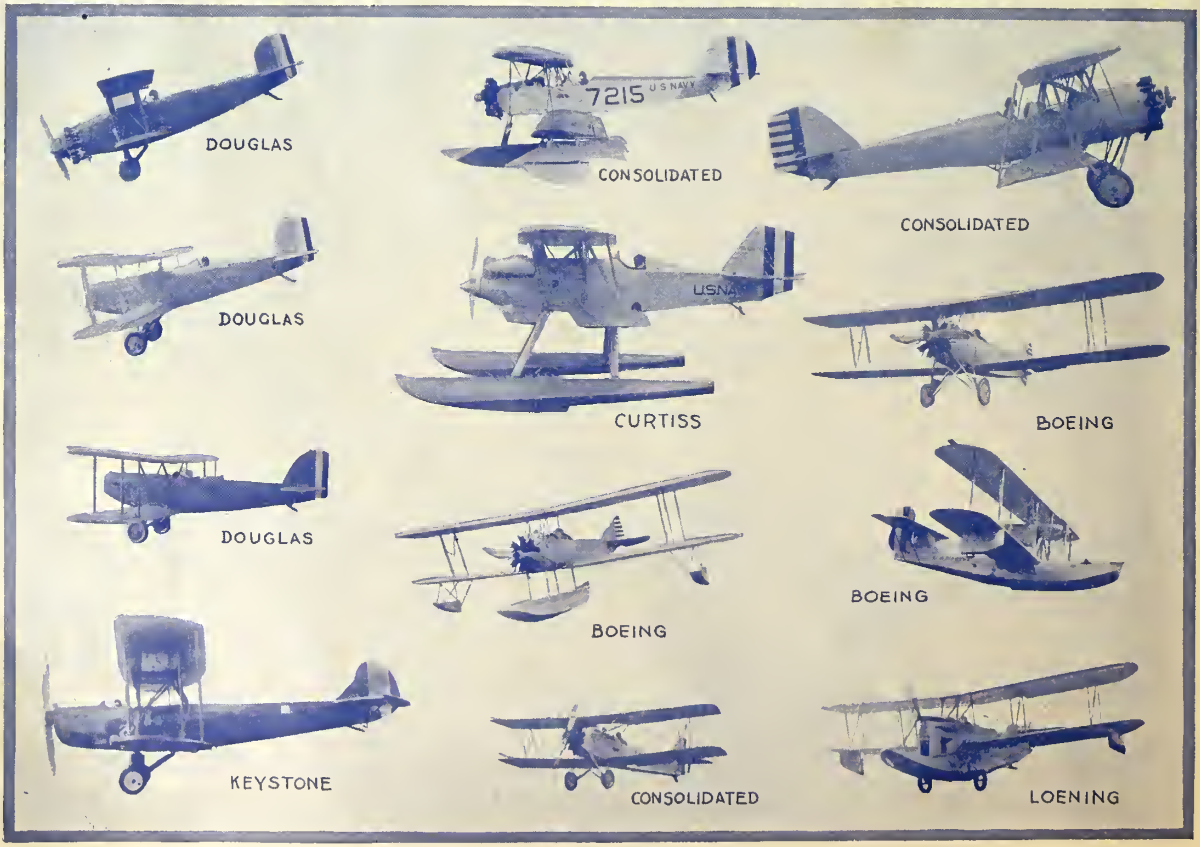
CHARACTERISTICS OF AMERICAN COMMERCIAL AIRPLANES

NAME OF MANUFACTURER	Model Number	Engine Used	Wing Span (ft.-in.)	Weight Empty (pounds)	Useful Load (pounds)	High Speed (mi. pr. hr.)	Range in Miles or Endurance in Hrs.
Advance Aircraft Co.	Waco 9	Curtiss OX5	29′–0″	1090	800	99	400 mi.
Advance Aircraft Co.	Waco 10	OX5	....	....	....	....	....
Aerial Service Corp.	Mercury	Liberty 12	47′–1″	3640	1875	125	500 mi.
Aerial Service Corp.	Mercury Jr.	Wright J4	32′–10″	1570	1020	130	....
Alexander Industries	Eaglerock	Curtiss OX5	38′–0″	1100	800	90	....
American Eagle Aircraft Co.	Amer. Eagle	OX5	30′–0″	1145	880	96	....
Atlantic Aircraft Corp.	F VII	(3) Wright J4	62′–5″	4620	3500	125	6 hrs.
Atlantic Aircraft Corp.	Universal	Wright J4	47′–0″	1500	1500	122	6 hrs.
Bach Airplane Co.	CS–1	Super-Rhone	25′–6″	....	825	107	....
Boeing Airplane Co.	Type 40	Liberty 12	44′–2″	3425	2070	135	7 hrs.
Brown Airplane Co.	Commercial	OX5	40′–8″	1200	300	110	400 mi.
Buhl Aircraft	Airster	Curtiss OX5	35′–8″	1380	765	95	5 hrs.
Buhl Aircraft	CA–3	Wright J5	35′–8″	1550	885	125	4.5 hrs.
Catron & Fisk Co.	CF–15	Wright E–3	33′–0″	1450	900	140	6 hrs.
Columbia Aircraft Co.	Bellanca	Whirlwind	46′–6″	1850	1604	130	....
Consolidated Aircraft Co.	Seaplane	Wright J4	34′–6″	1895	870	105	....
Curtiss A. & M. Co., Inc.	Carrier Pigeon	Liberty 12	41′–11″	3603	2017	121	590 mi.
Curtiss A. & M. Co., Inc.	Lark	Curtiss C–6	30′–8″	1550	870	114	4.5 hrs.
Curtiss A. & M. Co., Inc.	Lark	Wright J5	30′–8″	1494	1212	117	5 hrs.
Curtiss A. & M. Co., Inc.	Lark	Wright E2	30′–8″	1698	702	117	3.75 hrs.
Douglas Co.	DAM–4	Liberty 12	39′–8″	2910	2058	145	650 mi.
Douglas Co.	DO–2–Spec.	Liberty 12	39′–8″	2900	1780	140	8.5 hrs.
Douglas Co.	C–1	Liberty 12	60′–0″	3900	3520	119.7	....
Dycer Airplane Co.	Sport Plane	OX–5	30′–0″	1020	350	102	225 mi.
G. Elias & Bros., Inc.	M–1	Liberty 12	40′–0″	2840	1825	126	4.5 hrs.
G. Elias & Bros., Inc.	AJE	Liberty 12	44′–0″	2890	2070	125	....
G. Elias & Bros., Inc.	ES (Twin)	(2) le Rhone	35′–0″	1568	1032	86	5 hrs.
Fairchild Corp.	Monoplane	Curtiss OX5	44′–0″	1585	360	90	4 hrs.
Fairchild Corp.	Monoplane	Whirlwind	44′–0″	....	....	....	....
Ford Motor Co.	Monoplane	Ford Airplane	22′–0″	350	250	100	....
Ford Motor Co.	Tri-Motor	3–Whirlwinds	68′–10″	5200	4000	110	500 mi.
Ford-Stout	Monoplane	Liberty 12	58′–4″	3638	2379	115	4 hrs.
Hamilton	All Metal	Whirlwind	48′–5″	1856	....	....	....
Heath Airplane Co.	Parasol	Henderson	23′—0″	290	225	70	140 mi.
Hess Aircraft Co.	Bluebird	OX–5	33′–4″	1275	800	85	480 mi.
Ireland Aircraft, Inc.	Metcor	Curtiss OX5	30′–0″	1253	910	98	510 mi.
Irwin Aircraft Co.	Meteor Plane	Meteor Motor	20′–0″	230	195	90	4 hrs.
Johnson Airplane Co.	Johnson–60	2–Bristol	28′–0″	800	520	85	480 mi.
Kentucky Aircraft Co.	Cardinal		....	....	....	100	....
Keystone Aircraft Corp.	HD–31	Liberty 12	50′–0″	3300	3200	110	4 hrs.
Keystone Aircraft Corp.	Panther	Wright J4	29′–4″	1500	900	120	3 hrs.
Keystone Aircraft Corp.	Transport	(2) Wright J4	57′–0″	3300	3020	110	7 hrs.
Keystone Aircraft Corp.	Petrel V	Wright J4	33′–0″	1600	1000	110	6 hrs.
Kinner A. & M. Corp.	KE–5	Lawrance	31′–6″	700	....	85	....
Kinner A. & M. Corp.	Airster	Kinner K–2	28′–6″	....	800	110	400 mi.
E. M. Laird Airplane Co.	Mail Plane	Wright J4	....	....	....	....	....
Lincoln Standard	Sport	Anzani 35	20′–0″	370	230	90	250 mi.
Lincoln Standard	LS 5	Hispano 150	44′–7″	1735	1187	93	310 mi.
Mid-Continent Aircraft Co.	Spartan	Super-Rhone	32′–0″	1225	800	110	500 mi.
National Airways System, Inc.	Air King	OX–5	33′–0″	1095	850	99	400 mi.
Pitcairn Aviation, Inc.	Fleetwing	Curtiss C6	38′–0″	1802	1110	110	3.5 hrs.
Pitcairn Aviation, Inc.	Orowing	OX–5	36′–0″	1345	755	90	400 mi.
Ryan Airlines, Inc.	M–1 (Mail)	Wright J4	36′–0″	....	600	135	....
Ryan Airlines, Inc.	Monoplane	Super Rhone	36′–0″	....	....	....	....
Ryan Airlines, Inc.	Cloudster	Liberty 12	....	....	....	110	....
Ryan Airlines, Inc.	Brougham	Whirlwind	....	....	....	130	....
Remington Burnelli	R.B. 4	(2) Atlantic	78′–0″	9450	6150	....	....
Sikorsky Mfg. Corp.	S–29–A	(2) Liberty	69′–0″	7500	6100	120	6 hrs.
Sikorsky Mfg. Corp.	S–31	Wright J5	45′–0″	1750	1200	110	5 hrs.
Sikorsky Mfg. Corp.	S–32	Liberty 12	58′–4″	3400	2200	135	6 hrs.
Sikorsky Mfg. Corp.	S–33	Anzani	32′–0″	1000	550	130	3.5 hrs.
Sikorsky Mfg. Corp.	S–35	3–Jupiter	101′–0″	9703	....	145	....
Stearman Airplane Co.	C–1	OX–5	35′–0″	....	....	....	....
Stinson Aircraft Corp.	Detroiter	Wright J4	35′–10″	1700	1200	125	500 mi.
Stinson Aircraft Corp.	Monoplane	Whirlwind	....	....	....	....	....
Swallow Airplane Mfg. Co.	Commercial	Curtiss OX5	32′–0″	1300	950	95	4 hrs.
Swallow Airplane Mfg. Co.	Mail Plane	Wright J4	....	....	....	....	....
Travel Air Mfg. Co.	B	Curtiss OX5	33′–0″	1300	750	100	4 hrs.
Travel Air Mfg. Co.	CW	Wright J4B	42′–0″	1600	1400	120	4 hrs.
Travel Air Mfg. Co.	BW	Wright J4B	33′–0″	1350	900	135	4 hrs.
Travel Air Mfg. Co.	BH	Hispano 180	33′–0″	1450	800	125	4 hrs.
Travel Air Mfg. Co.	Mono. Cabin	Whirlwind	....	....	....	125	450 mi.
Waterhouse Aircraft	Monoplane	Wright J4	36′–0″	1540	910	138	5 hrs.
Waterhouse Aircraft	Cruisair	Wright J4	30′–0″	1200	850	100	4.5 hrs.
Waterhouse Aircraft	Monoplane	Whirlwind	....	....	....	....	....
Western Airplane Corp.	King Bird	Curtiss OX–5	35′–0″	1200	800	95	5 hrs.
W-F-W Aircraft Corp.	Thunderbird	Bailey C7R	....	....	....	....	....
W-F-W Aircraft Corp.	Thunderbird	Curtiss OX–5	....	....	....	....	....



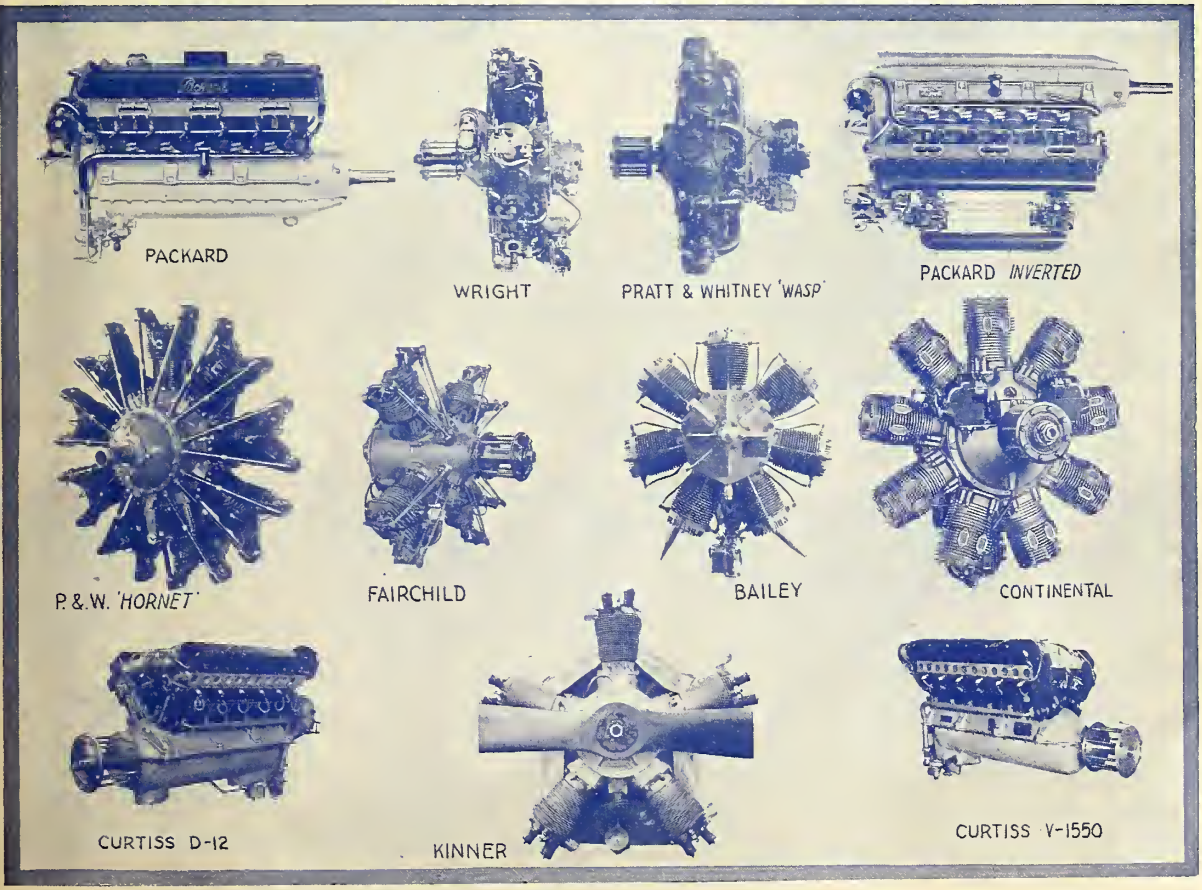
AMERICAN MILITARY TYPES OF AIRCRAFT

DETAILS of the aircraft used by our military forces are not permitted for publication, but the illustrations here show the types which have been developed by several of the leading constructors of military planes. The planes are in most cases convertible for land and water use, making them suitable for Army, Navy and Marine Corps. Power plants employed range from the 180 h.p. Hispano type in the advanced training Curtiss Hawk to the 800 h.p. Packard used in the single engined Keystone Bomber and the Boeing Pursuit Fighter.



CHARACTERISTICS OF AMERICAN AIRPLANE ENGINES

NAME OF MANUFACTURER.	Manufacturer's Model Number	Horse Power	Normal r.p.m.	Cylinder Bore (inches)	Cylinder Stroke (inches)	Weight Dry (pounds)	Weight (lbs./h.p.)
Continental Motors, Inc.	Single Sleeve	220	1800	4.5	5.5	475	2.16
Curtiss A. & M. Co., Inc.	OX–5	100	1400	4	5	435	4.35
Curtiss A. & M. Co., Inc.	C6–A	160	1750	4.5	6	420	2.36
Curtiss A. & M. Co., Inc.	D–12	435	2300	4.5	6	680	1.70
Curtiss A. & M. Co., Inc.	V–1400	500	2100	4.875	6.25	680	1.30
Curtiss A. & M. Co., Inc.	R–1454	400	1650	5.625	6.5	830	1.78
Curtiss A. & M. Co., Inc.	V–1550	600	2500	5.125	6.25	720	1.2
Curtiss A. & M. Co., Inc.	Geared V–1550	575	1250 (prop)	5.125	6.25	830	1.44
Detroit Aero Engine Works	Rickenbacker	60–80	1620	4	3.5	175	....
Fairchild-Caminez Corp.	447–B	150	1200	5.625	4.5	360	....
Ford Motor Co.	Aviation Engine	40	....	4.75	6.75	....	....
Irwin Aircraft Co	Model 72	20	1900	....	....	60	....
Kinner A. & M. Corp.	K–2	100	1800	4.25	5.25	231	2.31
Klamath Air Service Co.	Bailey C7R	140	1850	4.375	5.5	325	2.31
Packard Motor Car Co.	2A–2500 (direct)	800	2000	6.375	6.5	1150	1.44
Packard Motor Car Co.	2A–2500 (geared)	800	2000	6.375	6.5	1370	1.71
Packard Motor Car Co.	2A–1500 (inverted)	600	2500	5.375	5.5	770	1.28
Packard Motor Car Co.	2A(1500 (geared)	600	2500	5.375	5.5	870	1.45
Packard Motor Car Co.	2A–1500 (direct)	600	2500	5.375	5.5	750	1.25
Pratt & Whitney Aircraft Co.	Wasp	400	1900	5.75	5.75	650	1.625
Pratt & Whitney Aircraft Co.	Hornet	....	....	....	....	....	....
Roberts Aero Industries	RAI	100	1600	4.25	4.25	250	2.9
Steel Products Eng. Co.	Rausie E–6	175	1650	5	6	525	3
Tips & Smith, Inc.	Z–1 Super-Rhone	120	1450	4.125	5.5	340	2.8
Wright Aeronautical Corp.	Whirlwind	200	1800	4.5	5.5	480	....
Wright Aeronautical Corp.	Tornado	550–650	2000	5.75	6.25	1166	....
Wright Aeronautical Corp.	Morehouse	25–30	2500	3.75	3.625	89.5	....



Typical air-cooled and water-cooled types of American aircraft engines.

SUPPLIERS TO THE INDUSTRY

Accessories and Supplies

Tioga Steel and Iron Company

Manufacturers of steel cylinder sleeves, steel parts for aircraft and aircraft engines.

Thompson Products, Inc.

Valves built especially to meet the requirements of aircraft engines.

Rich Tool Company

Makers of salt-cooled valves for aircraft engines.

SKF Industries, Inc.

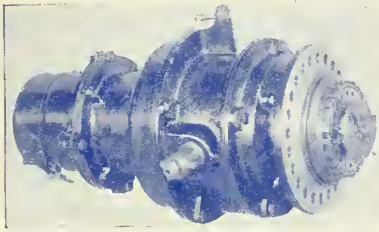
Manufacturers of ball and roller bearings for aircraft engines, accessories, instruments.

Standard Steel and Bearings, Inc.

Manufacturers of ball bearings for aircraft engines, magnetos, superchargers, instruments, etc.

Leece-Neville Company

Manufacturers of voltage regulated generators for night flying planes in Army and Navy Air Services, Air Mail and commerce.



Series VI Eclipse inertia starter.

Eclipse Machine Company

A complete line of aviation engine starting equipment for all types and sizes of engines are produced. Starters are available in a number of forms, namely hand turning gears with or without booster magnetos, electric starters, combination hand and electric starters, hand inertia starters and combination hand and electric inertia starters.

A complete line of generators are also available for both military and commercial use, either for constant voltage regulation or current control.

Standard Oil Company of New York

Aviation gasoline and oil manufactured by this company is widely used at many flying fields in the Eastern States. Pumps are installed at fields and airports and are regularly supplied with high test fuel.

Vacuum Oil Company

Oils and greases for all types of aircraft engines. Used by many of the largest operators of commercial aircraft. Used on the North Pole Flight of Commander Richard E. Byrd and Floyd Bennett in 1926.

Panhandle Refining Company

Standard high test aviation gasoline supplied to army fields in Texas during the war and since.

Norma Hoffmann Bearings Corporation

Manufacturers of precision ball and roller bearings which are used widely in airplane engines, magnetos, superchargers, earth inductor compasses and other instruments.

Goodrich airplane tires—large and small.

The B. F. Goodrich Rubber Company

A complete line of airplane tires are carried. The sizes range from the largest pneumatic tire, a 64 x 14 inch for particularly heavy bombing type planes to 18 x 3 inch for straight-side runs, which is believed to be the smallest airplane tire, and 20 x 4 inch for light planes.

Pioneer Instrument Company

The Pioneer instruments manufactured include the following: Thermometer, for oil or water; Fuel Pressure Gauge, showing pressure of fuel at carburetor; Oil Pressure Gauge, showing pressure at which oil is circulated in engine; Air Speed Indicator, showing speed of airplane relative to air at sea level; Tachometer, indicating speed of engine; Earth Inductor Compass, steering and direction indicator; Bank and Turn Indicator, showing if airplane is flying straight or turning to right or left and if level in straight flight and properly banked on a turn; Fuel Level Gauge, continuously indicates the amount of fuel in the tank; Rate of Climb indicator, showing how fast airplane is ascending or descending; Altimeter, indicating height above sea-level or starting point, depending upon setting of dial; Clock and Lights. All instruments are radium illuminated for night observation and may be graduated in nautical or metric units. Either "round dial" type or "vertical scale" type may be had.

The National Steel Products Company

The National Steel Products Company are designers and manufacturers of metal airplane parts. They are contractors to the U. S. Amry and Navy air services. Manufacturers of fuel pumps, gasoline line strainers, gasoline cork seated valves, hand starting and emergency fuel pumps, hand refueling pumps. Gasoline line fittings, cocks, shims and Liberty motor parts.

Sauzedde Corporation

The Sauzedde Corporation are designers and manufacturers of the Sauzedde wheel and brake unit which are built especially to meet the requirements of braking peculiar to aircraft. The wheel and brake are self centering and self energizing. Ground roll is reduced 60 per cent on aircraft equipped with these wheels. They eliminate the use of chocks for testing the motor on the ground.

Goodyear Tire and Rubber Company, Inc.

Manufacturers of everything in rubber for the airplane. Tires, shock absorber cord, waterproofing accessories for seaplanes, etc.

Scintilla Magneto Company, Inc.

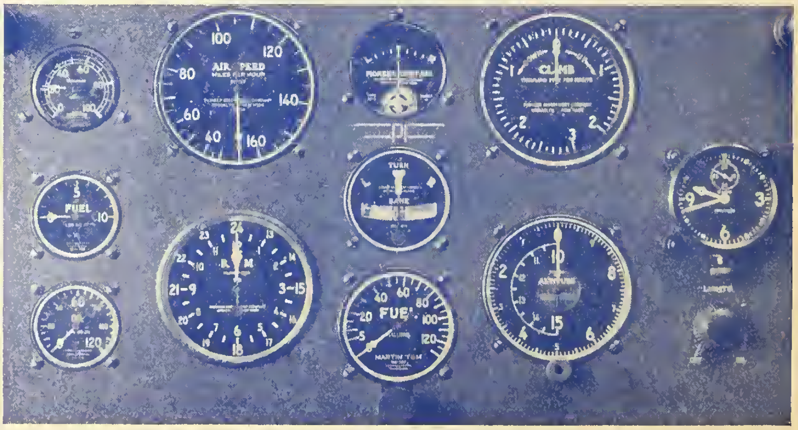
Aircraft magnetos for all types of engines used by the Army, Navy and Marine Corps. Also widely used in commercial aircraft equipped with modern aircraft engines.

Stewart Hartshorn square section tie rod.

Stewart Hartshorn Company

Streamline aviation tie rods for external bracing and square section internal tie rods for internal fuselage bracing for any type of aircraft manufactured. Tie rods are rigidly tested, each finished tie rod being subjected to a proof-load equivalent to 60 per cent of the constructed load, and can be furnished fully equipped with end fittings, clevis pins and cotters—the entire assembly galvanized and ready to place in the ship.

(*Continued on page* 410)



Airplane instrument board showing various Pioneer instruments.

HANGAR DOORS

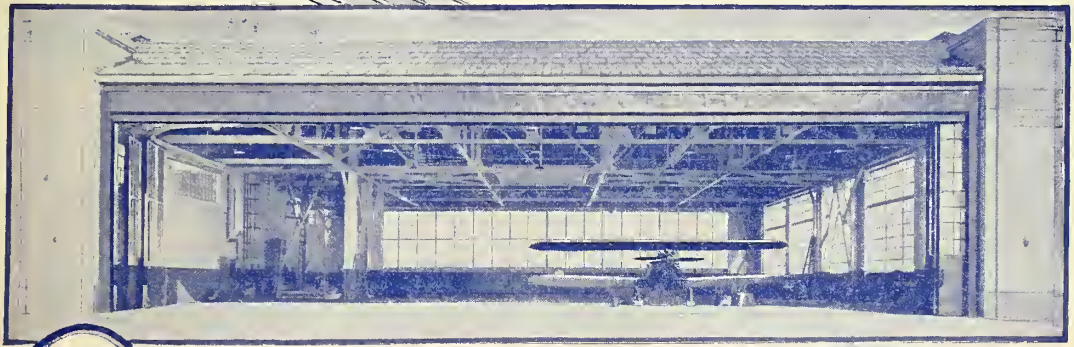
That Coast Open

Truscon Hangar Doors coast open! Roller bearings and correctly designed tracks and pulleys make it possible to open or close them with one arm! They are rigid, perfectly aligned, will not warp or stick and are of rust resisting copper-steel. They give fire protection and freedom from the danger of high winds, yet their ample window space admits plenty of daylight when closed. They roll back into small space for the free and unobstructed passage of planes. The nation-wide organization of Truscon will give you suggestions, estimates and complete information.

Write for descriptive literature

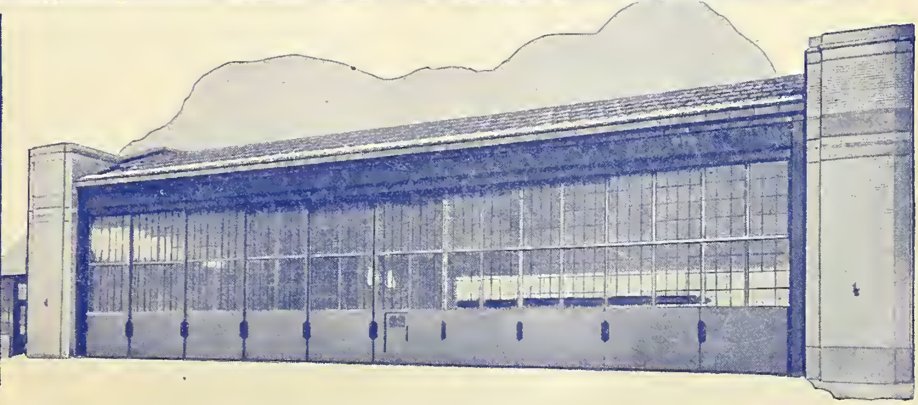
TRUSCON STEEL COMPANY
YOUNGSTOWN, OHIO
ESTABLISHED 1903
Warehouses and Offices in all Principal Cities.

TRUSCON



Airport,
Lansing,
Illinois.

Albert Kahn,
Inc.
Architects
and
Engineers.



Floyd J. Logan Aviation Company

All kinds of aeronautical products are marketed—airplanes, flying boats, motors, supplies, parachutes and flying gear, etc.

Hamilton Aero Manufacturing Company

Hamilton splitless propellers for aircraft use, also metal pontoons and other aircraft parts and accessories are made.

The Detroit Aero Motors Company

Dealers in aircraft motors of all descriptions, new and rebuilt. Also, parts and accessories.

Hartzell Walnut Propeller Company

Manufacturers of airplane propellers, correctly pitched and built to withstand the severe service on land planes and seaplanes of the Army and Navy.

S. S. White Dental Mfg. Company

Manufacturers of tachometer shafts for aircraft use. Built to U. S. Government specifications. Used on many service planes.

Detroit Air Appliance Corporation

A High Pressure Injector Starter for aircraft engines is manufactured by this corporation. The starter is designed to overcome the difficulty of cold weather engine starting. It is entirely automatic and operated from pilot's cockpit enabling the pilot to start his engine without any assistance.

Jones Centrifugal Type Tachometer.

Consolidated Instrument Company

Jones tachometers are manufactured for the commercial trade, and vertical scale tachometers of both the mechanical and electrical type for the Army and Navy. The Jones tachometer type B, is of the centrifugal type and not affected by temperature changes. It is light in weight, durable and simple in mechanism.

B. G. Corporation

The B. G. spark plug used widely in the U. S. Air Services and on a large number of commercial type ships on many important flights are manufactured. Domestic mica construction, re-inforced and fortified to withstand the hard wear of aircraft engine work.

The Boyce model C motometer.

The Moto Meter Company, Inc.

The Boyce motometer for measuring the temperature of oil and water in aircraft engines is manufactured.

The dial may be had with either Fahrenheit or Centigrade scale and the dials and pointers may be luminous treated for use in night flying. The instruments are stocked with 12½ feet tubing, but may be had with up to 30 feet of tubing.

Splitdorf Electrical Company

Magnetos for aircraft built with a thorough knowledge of the requirements of service. Supplied to the U. S. Army and Navy Air Services and many commercial operating companies.

Nicholas-Beazley Airplane Co., Inc.

Dealers in aeronautical products of all descriptions, motor parts, accessories, aircraft, aircraft parts, materials, flying gear, clothing etc.

Air Transport Equipment Company

All kinds of goggles, flying suits, safety belts, helmets, engine parts, pumps, magnetos, motors and complete aircraft supplies are marketed.

The Vimalert Company, Ltd.

Liberty 12, 400 h.p. engines are rebuilt under careful supervision, particular attention being given to individual requirements. Liberties with or without the latest improvements are available, depending on the customers' needs and preferences. Each engine receives a complete test run of several hours duration at which those concerned are invited to attend.

Dynamometer testing of Liberty engines at the Vimalert plant.

Robertson Aircraft Corporation

Marketers of reconstructed Standard J-1 airplanes with different type motors; also new and reconditional Curtiss JNs and Orioles. Thomas Morse and Spad Scouts. All types of motors are overhauled and on sale, and aircraft parts and supplies.

Magosy and Buscher

Specialize in making to order from blue prints anything in the line of sheet metal goods—metal spinnings, streamline fairings for propellers and all kinds of hand-hammered work.

Mueller Brass Company

The following aircraft products are manufactured: Mueller brass, bronze, copper and nickel silver alloys in the form of rods, tubes, forgings, castings, and screw machine products, including free cutting brass rods for screw machine products, brass and copper seamless tubing, aluminum bronze and manganese bronze rods, forgings of brass, copper and nickel, Mueller tobin bronze welding rods, S. A. E. fittings and others.

Aero Supply Manufacturing Company

Dealers in all kinds of supplies for the construction of aircraft. Specialists in screw production for aircraft construction.

Winchester cartridge core radiator.

Winchester Repeating Arms Company

The manufacturers of aircraft radiators for water-cooled engines is specialized in. This company has recently acquired the radiator business formerly operated and controlled by the U. S. Cartridge Company of Lowell, Mass. This radiator is made up from individual seamless hex end copper tubes, and is the type that has been standardized for all U. S. Government planes. This type of radiator is desirable for aircraft work from such view points as cooling, efficiency, strength, ease of repair, and minimum air resistance. On account of being assembled from individual tubes any type or shape of radiator can be made up in any depth required up to nine inches, also tunnel type radiators where the face of the core is at any angle desired up to 40 degrees.

The Aero Corp of Calif.

Eckles Heavy Type Valve Action Assembly for Curtiss OX5 motors and the Ball Bearing Assembly have been designed and perfected and are now marketed.

Lynite which combines strength with lightness, is used instead of aluminum for castings except in the construction of the exhaust yoke which is cast of bronze.

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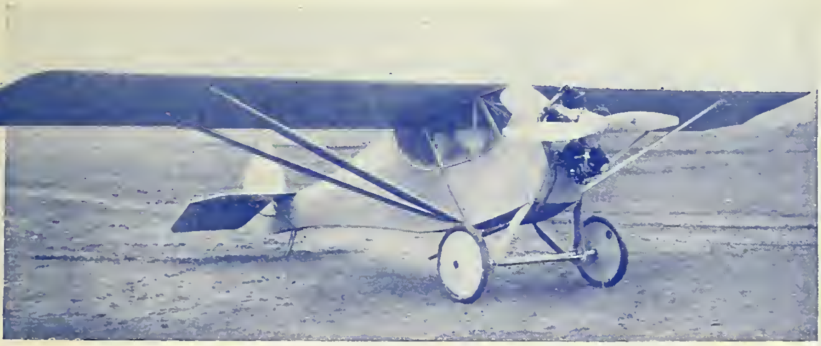


The Monocoupe

$2285

Establishing a new brand of performance and comfort

THE Monocoupe points the way in modern design to the plane of tomorrow. It offers the private owner for the first time the features necessary to give private ownership a new complexion.

You and your passenger sit side by side in a velour lined and upholstered cabin and converse at full throttle. Wear a straw hat and smoke if you wish. Unstick with full load in four seconds, figure twenty to twenty-five miles to every gallon of gasoline and hop off for four or five hundred miles without fatigue. Cruise at eighty-seven miles or open up to one hundred and two. Land at a low speed you have never thought possible to maintain flight.

With its excellent visibility, its smartness of line and appointment, the Monocoupe wins instant acceptance wherever it is shown.

Backed by ample resources and responsibility this new plane not only takes its place in foremost rank but promises to become America's easiest plane to sell.

Powered with the modern, air-cooled, 60-70 h. p. Detroit Aircraft Engine Corp. motor, it sets a standard for economical operation and performance which is the amazement of those who have flown it.

Distributors who have eagerly awaited this more modern type of plane will seek agency connections without delay.

The
CENTRAL STATES AERO CO.
INCORPORATED
DAVENPORT, IOWA

OFFICES:
318-319 WHITAKER BLDG.

FIELD AND FACTORY:
BETTENDORF, IOWA

The Autopulse magnetic fuel pump.

Ireland and Mathews Mfg. Company

Bolts, rivets, sheet metal stampings and the Autopulse magnetic fuel pump are manufactured. The Autopulse supplies the right proportion of gasoline to the carburetor, irrespective of grade, altitude, vibration, temperature, speed or condition.

The Dayton Wire Wheel Company

Wire airplane wheels now in use on many different types of Army, Navy and Marine Corps aircraft. Also widely used on modern commercial types of aircraft.

Construction Materials and Parts

Haskelite Manufacturing Corp.

Plywood and Plymetal used in the construction of all types of aircraft. Meets government air service specifications. Haskelite is of uniform light weight, strength and is absolutely waterproof.

Paramount Welded Aluminum Products

Welded aluminum tanks and containers are manufactured. Also sheet metal work of all sorts in Terne Pate, Monel and Brass.

Standard Automatic Products Company

Manufacturers of standard type turnbuckles, clevis ends, clevis pins, aircraft bolts, etc. Milled from bar. Contractors to the U. S. Army and Navy and aircraft manufacturers.

Clark Fosdick

Dri-O-Lac aircraft finish meeting all requirements and tests for waterproof varnish is manufactured.

The Dickerson Steel Company

A complete stock of aircraft steels which meets government specifications. Alloys and simples, bars hot and cold rolled, strips, are manufactured.

Macwhyte Company

Macwhyte streamline and round tie rods for internal and external bracing in aircraft construction are manufactured.

New Jersey Veneer Company

Manufacturers of water resistant panels of plywood used widely in construction of aircraft. Meets all Government specifications and requirements.

Jonas B. Oglaend, Inc.

U. S. representatives of Accles & Pollack, manufacturers of weldless steel tubing for airplanes, airships, gliders and all engineering purposes.

Service Steel Company

Seamless steel tubing for aircraft construction is manufactured. Complete warehouse stock is kept ready for immediate shipment in any quantity.

The Chas. Fischer Spring Company

Tachometer shafts, valve springs and wire specialties for aircraft use are made.

Russell Manufacturing Company

Manufacturers of Rusco endless rings, shock absorber units, Rusco shock absorber cord, brake linings, packing tape, radiator web, re-inforcing tape. All the U. S. Army and Navy specifications are met.

E. S. Twining and Company

Manufacturers of Grade A fabric for airplane construction known as Flightex Fabric. Used by manufacturers who are building aircraft of every type for the U. S. Army and Navy Air Service.

Titanine, Inc.

Manufacturers of Titanine airplane dopes, pigmented dopes, varnishes and enamels. Contractors to the U. S. Government.

Wellington Sears and Company

Manufacturers of Warwick non-tear aero cloth. Meets U. S. Army and Navy air service specifications.

Berry Brothers, Inc.

Aircraft Berryloid, Lionoil and other aircraft finishes, paints and varnishes are manufactured. Berryloid is a long-wearing, high-luster pyroxylin finish that resists the effects of gasoline, oil, salt water and the elements. Lionoil prevents rust on metal parts.

Bohn Aluminum and Brass Corp.

Bohn Ring True steel back, babbitt-lined bearings, especially designed for airplane engines, Bohnalite castings, both permanent mold and sand, and Nelson Bohnalite pistons are manufactured.

Sumerill Tubing Company

Manufacturers of seamless steel tubing, round, streamline, nickel steel, straight carbon, chrome molybdenum.

Van Schaack Chemical Works, Inc.

Manufacturers of nitrate dope and other aircraft finishes for the U. S. Government and aircraft manufacturers.

Wickwire Spencer Steel Company

Manufacturers of steel airplane wire, tempered and drawn to insure extra strength to meet aircraft construction requirements.

Commercial Acetylene Supply Co., Inc.

Producers of acetylene for use in the welding of aircraft structures and parts.

Peter A. Frasse and Company, Inc.

Steel rods and seamless steel tubing. U. S. distributors for Brunton tie rods, streamline wire, fittings, valve spring wire, etc.

The Casein Manufacturing Company

Manufacturers of Casco waterproof glue for gluing of joints or plywood to meet the requirements of the U. S. Army and Navy Air Service Specifications.

Belden Manufacturing Company

Cables and wiring for ignition and lighting systems and radio, either shielded or unshielded are manufactured. The shielded wiring harness is used by the U. S. Air Services and equipped Comdr. Byrd's Polar Plane and the World Flight Planes.

Bausch Machine Tool Company

Manufacturers of Bausch Metal duralumin rods and wire especially adapted for screw machine products and hardware. It has the physical properties of mild steel yet is as light as aluminum and meets all requirements of the Army and Navy air services.

E. I. Du Pont de Nemours Company

Manufacturers of aircraft finishes scientifically adapted to meet all conditions peculiar to the operation of aircraft. Paints, varnishes, light bodied lacquers, enamels, Duco, wing dope, etc.

Valentine and Company

Varnishes of all kinds for aircraft use are made. Waterproof Valspar and Nitro-valspar are used on airplanes of Army and Navy. Long identified with the production of American aircraft and used on many of the planes which have made historic flights such as the NC4, Douglas, and the Round the World Planes.

Airport Equipment

L. G. Brightmire Company

All types of portable buildings and hangars are manufactured. An all-steel building has just been designed in the shape of a T, on either side of the T, the hangar owner may have a private room for tools, oils or dressing room as he desires. Hangars are all individual with the idea that it gives greatest protection to planes, reducing fire risk and overhead expense.

J. G. Wilson Corporation

Wilson rolling steel doors, multipally operated by electric motors. In use on hangars at many well known airports. Doors coil overhead out of the way giving unobstructed opening.

William E. Arthur Company, Inc.

Designers and builders of airports, flying fields and hangars. Many air mail and private flying fields have been constructed by this company.

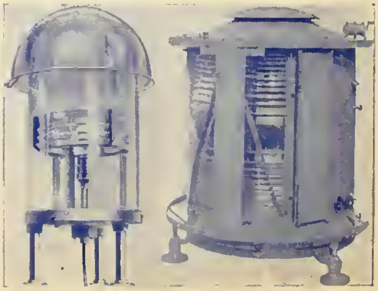
Butler Manufacturing Company

All-steel hangars, individual or large for airports, smaller for private fields and steel service buildings are manufactured. These ready-made steel hangars are non-combustible. Wall and roof sheets are 24 gage with paneled corrugations bolted together with galvanized stove bolts, provide secure fastening. Good lighting is provided for by windows in the sides and in the roof monitor.

B. B. T. Corporation of America

Manufacturers of flashing beacons, floodlights and other airway lighting equipment. There are many types of flashing beacons ranging in size from the small lens unit with a 1000 watt lamp as a light source to the largest unit, that at Dijon, France, which develops one billion candle power, and employs eight 150 ampere arc mechanisms installed behind eight lens panels.

(*Continued on page* 414)



Two types of B. B. T. flashing beacons.

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"ON to Paris," is the thrilling cry of adventure beckoning toward a new world-record of a non-stop flight from New York to Paris for the Raymond Orteig prize of $25,000. And once again SKF anti-friction bearings, because of their proven record in other epoch-making flights, will play an important part in this imagination-stirring event to forge another connecting link between the old world and the new.

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Roller Bearings

THE SPERRY GYROSCOPE COMPANY

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THE AUSTIN COMPANY

The Austin Company are designers and builders of modern hangars, airports, mooring masts, machine shops, aircraft buildings.

HERBERT E. BUCKLEN CORPORATION

Designers and manufacturers of wind-driven generators for electric lighting and power units. They have been adapted to meet the requirements of flying fields for the illumination of beacons, field lights, etc.

TRUSCON STEEL COMPANY

A complete line of steel buildings, steel windows, hangar doors that coast open, metal lath, steel joists, steel poles, concrete reinforcing for buildings and roads, pressed steel specialties, waterproofing and technical paints are manufactured.

GENERAL ELECTRIC COMPANY

Lighting equipment for airports and airways are manufactured. Beacons, boundary lights, field lights, transformers, wire, etc.

Flying Equipment

STRAUSS AND BUEGELEISEN

Resistal non-shatterable goggles are manufactured. The cushion fits around the face formerly made of fur are now made of sponge rubber, affording good ventilation.

A. G. SPALDING & BROS.

A complete line of flying suits for winter and summer wear, helmets, gloves, shoes and other wearing apparel for flyers.

IRVING AIR CHUTE COMPANY

This organization is the designer and manufacturer of safety parachutes for airplanes, balloons, dirigibles which are standard equipment for the U. S. Army, Navy, Marine Corps, Air mail, the British Air Ministry, other foreign governments and numerous commercial companies.

RUSSELL PARACHUTE COMPANY

Designers and manufacturers of positive and rapid opening parachutes with soft back and seat packs equipped with harness that automatically adjusts itself to the movements of the wearer's body.

E. B. MEYROWITZ, INC.

Manufacturers of Meyrowitz Luxor Goggles. Used as standard equipment in U. S. Army and Navy Air Services. Patented features—ventilated frame, adjustable nose bridge, fitted with curved ground lenses for normal and corrected vision.

GORDON AND FERGUSON, INC.

Gordon Aerotogs used widely by commercial pilots and Army and Navy pilots are made. Flying suits, leather lined jackets and coats, helmets, gloves, mittens.

Miscellaneous

FAIRCHILD AERIAL CAMERA CORPORATION

Manufacturers of military and commercial mapping cameras. The Model K-3 may be used with motor generator, wind type generator and storage battery. The new Fairchild automatic recording camera, on a strip of 75 feet of film, will take 115 consecutive exposures, 7 x 9 inches in size, and all the pilot has to do is to set the Intervalometer on his instrument board. Complete engineering data are recorded by the camera.

FAIRCHILD AERIAL SURVEYS, INC.

An aerial photographic and surveying company, essentially civil engineers and map makers. They are pioneers in aerial surveying and map making.

THE INDEPENDENCE COMPANIES

Aircraft insurance is offered against all aircraft, hazards for manufacturers, owners, operators, pilots, shippers and others. Seven coverages are obtainable in the "all-in-one" policy—other coverages in separate policies.

FREE BOTTOM CRAFT, INC.

Shallow draft boats driven by airplane propeller for sport use and for operation in shallow waters where only a canoe can follow are manufactured.

BROWNBACK MOTOR LABORATORIES

New models of Anzani motors are marketed. These are similar to former Anzanis but are refined to a high degree in small details, notably pistons, crankpin bearings, valves, rocker arm pins and mounts, lubricating system, etc. Two, three, six, ten and twenty cylinder models, varying in weight from 70 pounds to 1200 pounds are produced all radial air-cooled.

They also manufacture the Saftiboat. The Saftiboat is a shallow draft, air propelled runabout type.

IDEAL AEROPLANE & SUPPLY COMPANY

Models, model materials and supplies and scale plans of all modern types of airplanes are manufactured. These models have parts and fittings like real machines.

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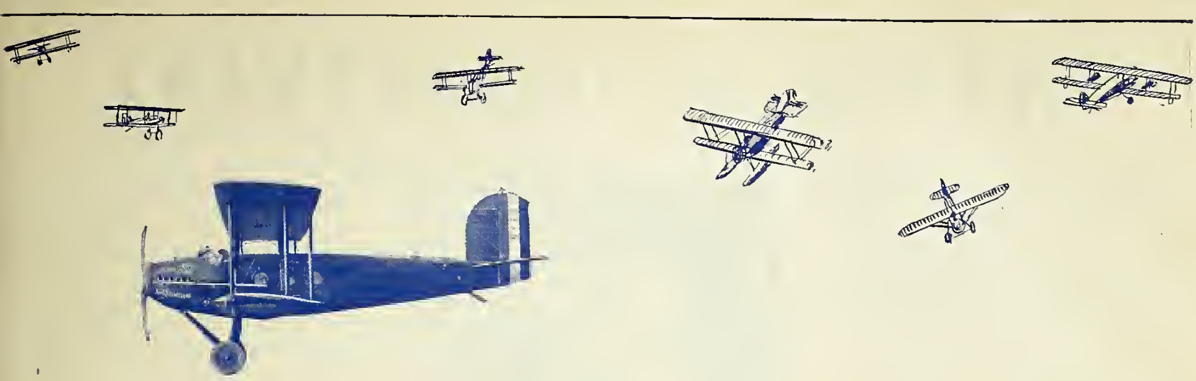

Now you can learn Aviation and make big money

AT home—in your spare time—grasp all the fundamentals. You can do it. You can fit yourself for one of the many real opportunities—in the air and on the ground. Begin at once, under direction of Lieut. Walter Hinton, while the men who *know* Aviation are comparatively few.

Aviation is the great, new industry of the age. The time to get into it is now, when it is young. Think of the fortunes that men made by starting early in the Automobile business—the Telephone, Railroading, the Moving Pictures. Men who grounded themselves in the fundamentals of these businesses, in their practical everyday workings and processes; men who could talk their language from the start, made good earnings and rapid progress as the industries grew.

Lieut. Walter Hinton

Capt. "Eddie" Rickenbacker

—"My Dear Walter:—There is no doubt but what you are on the right track, and should make a great success of it, as the ever-increasing demand for knowledge of aeronautics can not help but bring you many students, who I know, will benefit greatly from your vast experience. — E. V. Rickenbacker.

The recent growth of Aviation is prophetic. It is the kind of expansion that means health, solidity and permanence—it is *commercial* expansion. Mail, express and freight are beginning; great factories are building planes by hundreds for both pleasure and business use.

The industry is growing so fast that there is a positive hunger for trained men in all its branches. *But without training, no man is wanted.*

Aviation Institute can give you the necessary knowledge. It is easily acquired in spare time, at home. All you need is a desire to learn. Lieut. Hinton, of N. C. 4 fame, and his staff of experts will guide your instruction from beginning to end. There are many positions open as mail pilots, commercial flyers, instructors, as well as plenty of well paid jobs as inspectors, riggers and mechanics on the field—to say nothing of any amount of openings in the different factories.

But aircraft manufacturers must have trained men. There must be no mistake in the construction of a plane.

On a flying field, men without the proper training endanger themselves besides hindering flight instructions and other practical flying work. The pilots, mechanics and others have no time in which to coach anyone in the needed preliminary knowledge. Flight instructors dislike teaching anyone to fly who is unfamiliar with aviation terms, the fundamentals of airplane mechanics and theory of flight. In the Army and Navy flying schools, students must go through weeks of ground work before getting into the air at all, while the regulations of the Department of Commerce *require* theoretical knowledge as well as ability to fly before a pilot's license can be issued.

The Aviation Institute course teaches you everything you need to know, right up to the point of actual flight instruction on the flying field and in the air. All the preliminary work is overcome in a few pleasant hours at home. When you have graduated from the Institute, and received your card, you are ready for the sky. Five to ten hours with an instructor and you can fly *alone*.

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TECHNICAL DEPARTMENT

THE VOUGHT "CORSAIR"

THE setting of a new world's altitude weight carrying seaplane record, a new world's speed record for seaplanes and the award by the U. S. Navy of a contract for 33 ships, again brings the spotlight on the Chance Vought Corporation and its newest model, the "Corsair".

On April 14th, at Anacostia, D. C., Lieut. George R. Henderson, U. S. N., flying a standard Vought "Corsair", brought another world's record back to the United States by setting a seaplane altitude record of 22,178 feet, carrying 500 kilograms (1102.3 pounds) ballast, the actual useful load carried, including pilot, fuel, equipment, etc., exceeding 1640 pounds.

Lieut. S. W. Carraway, U. S. N., set a new world's seaplane speed record in the Vought "Corsair" on April 23rd at Hampton Roads, Virginia. Carrying a load of 500 kilograms he attained an average speed of 147.263 m.p.h. for 100 kilometers (62.1 miles).

The Vought "Corsair" (Navy Model O2 U-1) is a high-speed two-place observation airplane, and is the first plane built to meet the latest and more vigorous requirements of the U. S. Navy Air Service for two-place observations and reconnaissance airplanes. These planes will be used as replacements for the present Vought Model UO-1s, now used so extensively, throughout the U. S. Navy Air Service. The following "Corsair" performance and construction details are particularly interesting.

The "Corsair" is a tractor biplane, powered with Pratt & Whitney "Wasp" 400 horsepower radial air-cooled engine. It was designed by Vought engineers in co-operation with the Bureau of Aeronautics, and is of the convertible type using interchangeable wheel-type or float-type landing gear.

Some measure of the versatility of the "Corsair" is obtained from mention of its wide range of service capability, including regular high-speed reconnaissance work as both land and seaplane, observation, two-seater fighting, and general cross-country work, in which services it may be catapulted as either a landplane or as a seaplane from the scout cruisers and battleships, and is further equipped to take off from and land on the aircraft carriers.

Lt. Henderson, U. S. N. and the Vought "Corsair" which set a new altitude record.

The Navy Department has withheld publication of the actual performance data on the "Corsair", but the top speed may be said to substantially exceed that of present two-place service types, and to approach that of service single-seater pursuit types. The demonstrated low speed was much lower than specified requirements.

The official full-load climb in ten minutes exceeds that of present standard single-seater pursuit types, and equals that of the newest experimental single-seater fighters. The speed range, the ratio of high to low speed, is particularly noteworthy, and on the order of 2.85, obtained under official full-load test conditions.

Perhaps the most interesting phase of the "Corsair's" performance is its actual ability to out-fly and out-maneuver present service single-seater and two-place types at high altitude levels. It will not fall out of tight maneuvers at service ceiling, and its service ceiling, as a seaplane, has been shown to exceed that of the new single-seater fighters as landplanes.

The biplane wing cellule is made up of a special Vought thick airfoil section for the upper wing, and a double cambered section for the lower wing. The cellule combines forward stagger with sweepback in the upper wing. This new arrangement gives, at all flying speeds, marked stability when combined with a judicious arrangement of the tail surfaces, and furnishes an exceptionally steady gun platform resulting in much greater accuracy of fire from both fixed and free guns.

While the "Corsair" is extremely stable in flight, the control is particularly easy and the plane flies and maneuvers at the touch of a finger. It spins very rapidly and easily when put into a spin, yet it will not "flat-spin", nor has it any "auto-rotative" tendency.

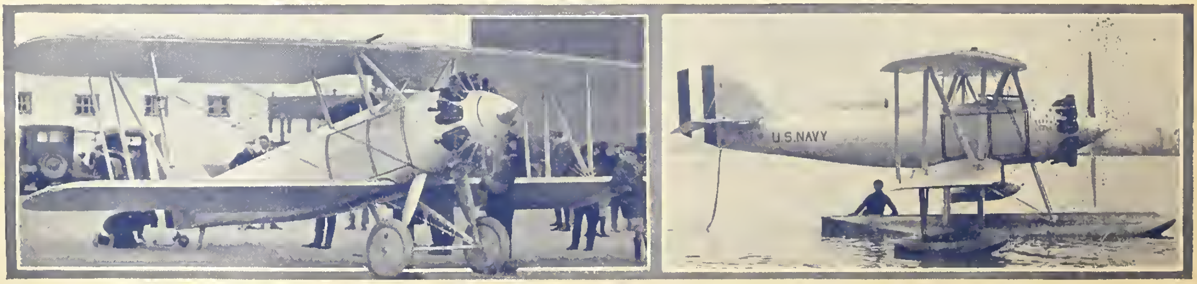
In a properly designed airplane of this type, the use of Freize or Panther type ailerons to obtain precise and easy lateral control was definitely shown by this new Vought 2-seater to be neither necessary nor desirable.

The wing arrangement and the disposition of the cockpits gives unusually good vision, perhaps the best average vision for all purposes and with maximum arcs of fire for the free guns. Remarkably good downwards and landing vision obtains from both cockpits, so that reconnaissance and "spotting" are greatly facilitated and accuracy in observation assured. The pilot can actually see the landing gear wheels and axle. If additional vision is desired for deck landings, however, the pilot's seat is provided with an automatic height adjusting device, making it possible to instantly adjust the seat in the air when coming in for a landing.

The wings are of standard Vought construction, built up with spruce beams (except in center section where steel beams are used), and ribs of plywood and spruce with Warren-truss stiffeners. The wing panels are fabric covered, and finished with Perry-Austin pigmented dopes.

The tail surfaces are of ample size giving positive control at all speeds, even below stalling. The tail units are of welded steel tube construction, fabric covered like the wing panels, with pigmented dope finish.

The horizontal stabilizer is adjustable in flight by a convenient hand wheel control in the pilot's cockpit.



The Vought "Corsair" (Navy Model O2U-1) powered with the 400 horsepower Pratt & Whitney engine.

The comfort of the crew has been given special attention. Both cockpits are exceptionally long and roomy, affording unusual leg-room and comfort for both occupants. Cockpits are windproof and fitted with adjustable, non-shatterable glass windshields. Ingress and egress from both cockpits is remarkably easy, even with a parachute. In addition to the adjustable seat noted above, the rudder bar in pilot's cockpit is also adjustable for the comfort and accomodation of different pilots. The rear seat may be folded out of the way, and with the removable rear stick and arrangement of controls, gives an unobstructed gunner's cockpit for the operation of the free guns. The fuselage side fairing forms compartments on both sides of the rear cockpit for the convenient location of operating and special equipment, leaving the cockpit sides free from projections which might foul a parachute. This feature is not possible, of course, in flat-sided longeron-faired fuselages.

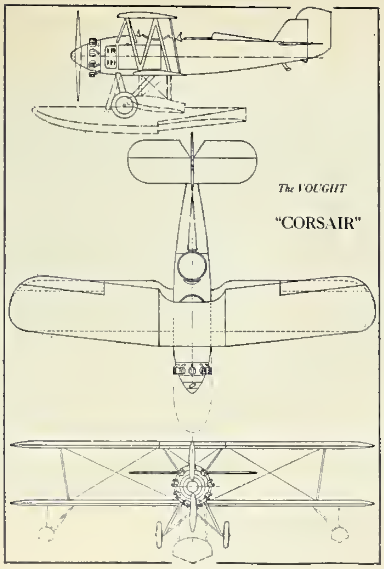
The fuselage is of the tandem cockpit arrangement, carefully streamlined to reduce resistance. The fuselage frame is fabricated of chrome-molybdenum steel tubing, welded together, with proper "follow-thru" eliminating butt welds at all important stations. Aluminum cowling is used on the fuselage from the rear cockpit forward, and fabric covering over the faired truss aft. Provision has been made for some control of engine cooling by means of suitable diaphragms in the engine cowling. Ample access doors are provided through the fuselage to permit easy maintainance of operating parts, and whole units of the cowling are quickly detachable for overhaul operations, fasteners which do not require any tool to open being provided.

Ample stowage space is provided behind the rear cockpit for stowage of hoist sling, life raft, etcetera. Stowage for luggage is provided under the seat in the rear cockpit.

The Pratt & Whitney "Wasp" engine is mounted on a very simple engine mount built up of welded steel tubes and a pressed ring plate. All tube ends are reenforced and tongued, and the mounting is designed with all welds in shear. The simple construction insures reliability in service, and the mount is quickly detachable by the removal of only four taper attachment bolts.

The propeller used in this latest Vought model is of the two-bladed all metal type and was manufactured for the Navy Department by the Standard Steel Propeller Company of Pittsburgh, Pa.

The fuel tanks are of the familiar Vought side type, fitting into the sides of the fuselage fairing, but in the case of the "Corsair" both tanks are duplicates and interchangeable—an important advantage when considering spare parts problems. The tanks are of unusually large capacity which, with the economy of the "Wasp" engine, give the "Corsair" a large flight radius and make it adaptable for long cross-country flights as well as long distance reconnaisance work at sea. The oil tank is mounted behind the engine compartment fire wall. All tanks are fitted with large diameter filler necks with special filler caps, making it possible to refuel the "Corsair" very quickly. The fuel and oil system can be completely drained, as suitable drain cocks and plugs are located at the lowest points in the respective systems.


The VOUGHT "CORSAIR"

The "Corsair" wheel-type landing gear is of the pneumatic type with shock-absorbing unit incorporated in the front legs. An oleo check acts as a stabilator to control rebound of the air cushioning device. Oversize 32" x 6" wheels and tires are used, and the wheels are enclosed in spun metal fairings. With this gear, smooth landings are possible even on very rough ground, and the long stroke air-cushioning reduces chances of breakage even in very bad landings.

The production "Corsairs" will be fitted with a slightly modified pneumatic-oleo landing gear providing split type axles, in combination with a jury cross-axle for deck landings on aircraft carriers. New type servo wheel brakes with mechanical control are provided.

The float-type landing gear for the "Corsair" is of special Vought design. It represents a very interesting and promising advance in seaplane engineering practice. This new gear is entirely of metal, and consists of a single central main float and two wing tip floats, all especially designed for catapulting and rough water use. With this new type gear, the "Corsair" lands very smoothly in quiet or rough seas, gets off the water quickly, and its performance as a seaplane very closely approaches that as a landplane.

The few working parts are all quickly accessible for maintenance and adjustment. Parts of the control system which are subject to wear are fitted with renewable hardened and ground stainless steel bearings and universals, with Alemite connections to insure easy lubrication. Ample cowling doors are provided, and with either side fuel tank removed (which can be done in a few minutes) complete access to cockpit mechanisms is conveniently provided. The lower wings have walkways at the fuselage ends for working on mechanisms, for filling of fuel tanks, armoring, etc.

The "Corsair" was designed and constructed to meet two-seater fighter strength requirements. It carries four guns, two of which are fixed and their installation and arrangement represents a very marked improvement over current ordnance practice.

HIGH PRESSURE INJECTION ENGINE STARTER

ONE of the latest additions to the aircraft industry is the high pressure injector starter for aircraft engines developed by the Detroit Air Appliance Corporation.

Engines of great power and high compression, such as are used in airplanes, are slow to start particularly in cold weather due to the difficulty in getting sufficient speed of rotation to cause the carburetor to function properly. The high pressure injector starter was designed to overcome this.

The starter's equipment comprises a small crank or cam-driven air compressor, a seamless steel tubular tank of about 6.10 cubic foot capacity, an automatic valve that releases the load at 375 lbs. pressure, a release valve for starting, inlet valve for the cylinders, distributor and copper tubing. The complete starter weighs between 25 and 35 lbs.

The operator by merely pressing a button, releases compressed air from the tank to the distributor which is timed and rotates with motor. The greater portion of the air is conducted to the cylinder that is on its power stroke. Entering the cylinder, the air forces the piston downward and engine rotation begins.

Simultaneously, the smaller portion of air and a properly proportioned amount of gasoline goes through a carbureting process and is forced into the cylinder that is on its compression stroke. Ignition takes place when this stroke is complete or slightly past top dead center with the effect of speeding the rotation already begun by the air. A few revolutions forced in this way brings the carburetor into action and the start is complete.

Charles F. Heywood, an engineer of prominence and an authority on high powered motors is the designer and inventor of the starter. Still further important improvements have been developed by Joshua Patrick, now chief engineer of the company and formerly with Hoskins Mfg. Co. and the General Motors Corp.

CIVIL SERVICE EXAM.

JUNIOR AERONAUTICAL ENGINEER

APPLICATIONS for junior aeronautical engineer must be on file with the Civil Service Commission at Washington, D. C., not later than May 14. The date for assembling of competitors will be stated on their admission cards and will be about ten days after the close of receipt of applications. The examination is to fill vacancies in various branches of the service throughout the United States.

The entrance salary in the District of Columbia is $1,860 a year.

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Stabilizers adjustable in flight to equalize load.

Inspection windows in both lower wings permits examination of aileron control wires and pulleys without removing fabric.

Aerodynamically improved wing tips and rudder provide greater lift and easier maneuver.

All over cowling protects motor from rain and moisture.

Clear vision for Pilot and Passengers. Dash fully equipped with necessary instruments.

Duralumin is the foundation of this wonderful plane. Tail group weighs but 30 pounds. Duralumin tube with balsa wood streamline struts cut down weight, too. Streamline design from nose to tail skid.

Trussed tube fuselage has no wire rigging—needs no constant adjusting.

These features, added to Air-King's efficient, basic design, make it worthy to keep the first place it holds among all planes in its class.

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Increased production makes possible additional dealer opportunities. There is an active, growing demand for AIR-KING. Write today for our exclusive, protected and profitable dealer franchise.

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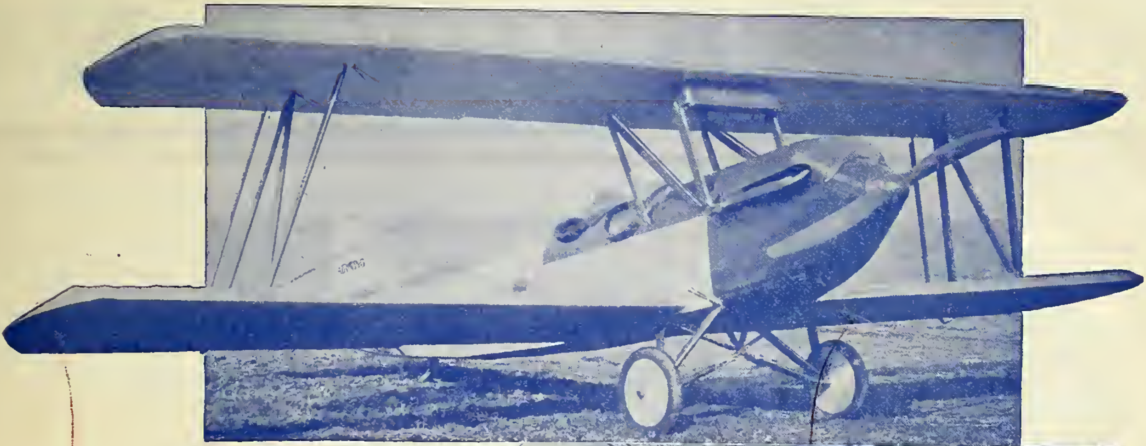
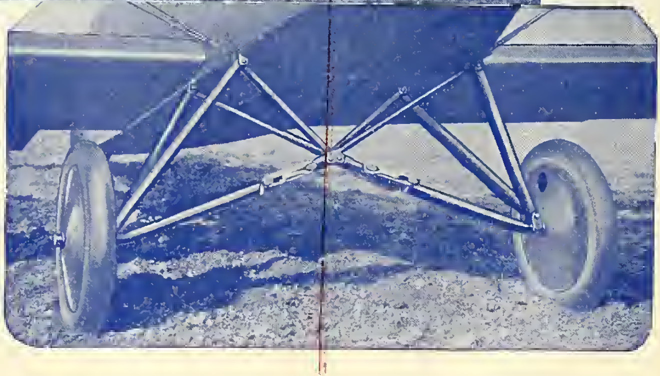
LOMAX, ILLINOIS FIELD 8





Sturdy
UNDER CARRIAGE

Shock absorbing split landing gear; wide tread. Only one of the many excellent features of AIR-KING.

Sky High in Everything but Price

Factory production of the AIR-KING has increased 300% in the past 30 days. Why? Airport owners, dealers and plane buyers now realize that AIR-KING answers perfectly the student, commercial and sport demand for a plane that will do everything anyone has a right to expect from any ship of this type.

Even though AIR-KING weighs but 1,095 pounds empty, it is not a small ship. Wing area is 300 square feet; useful load is 850 pounds; 26 feet long, 8⅔ feet high and with a 33-foot span it is just the right size ship for small landing fields, commercial work, student training and pleasure use.

NATIONAL AIRWAYS SYSTEM
LOMAX, ILLINOIS, FIELD 8

NAS

AIR-KING

PROVEN

ANOTHER record with a stock model demonstrating the efficiency of the Bellanca, leader of modern single-engine, cabin commercial planes, was established by the record duration flight made last month by pilots Clarence D. Chamberlin and Bert Acosta at Mineola, L. I.

Bellanca type aircraft have always maintained a reputation for efficiency, speed and comfort which ranks high among the aircraft of the world.

The Columbia Aircraft Company will soon start on a schedule of production of Bellanca type aircraft to meet all commercial and military requirements.

Buy the Original Bellanca Monoplane
—Not An Imitation
Inquiries are
solicited

COLU

AIRCRAFT CORPORATION,

EFFICIENCY

The Bellanca Monoplane on its record-breaking duration flight — 51 hours, 11 minutes, 20 seconds; April 12, 13 and 14, 1927

M B I A

Woolworth Building, NEW YORK CITY

THE BELLANCA SIX-SEATER CABIN MONOPLANE

THE Bellanca plane is not an experimental model but is a further development of the cabin monoplane which Mr. Bellanca has been building since 1921. The very first plane of this type, powered always with an air-cooled engine, won thirteen first prizes in various events. Two other planes of the same type won the most important efficiency race for commercial airplanes in 1925, and the speed and efficiency for the light commercial and air transport races in 1926.

In the design of this plane every provision has been made for maximum safety. This includes low landing speed; good vision; the elimination of fire hazard; long gliding angle, 12½ to 1; excellent controllability at low speeds; the wing high off the ground; wide wheel tread and high factors of safety throughout.

The high speed of the Bellanca plane is 130 miles per hour. It cruises at 110 m.p.h. at 1550 r.p.m. Thus, in fighting a hard head wind, maintained high speed is possible.

The plane seats five passengers comfortably and two more passengers can be carried in lieu of baggage. Loading and unloading passengers from the plane is quickly done. For express and mail carrying the large cabin space of 140 cu. ft. gives ample cargo room. A quick take-off and short roll permits the use of conventional landing fields for passenger carrying. The low h.p. required for normal flight insures minimum fuel consumption.

Special effort has been made in the design to reduce construction cost. The single untapered semi-cantilever wing represents the most economical type of wing construction. The air-cooled engine economizes on radiation and plumbing. Every effort has been made to keep down the manufacturing cost without sacrifice of safety, performance or durability.

The passengers sit in a roomy, well-ventilated cabin, in comfortable chairs, out of the rush of wind. No special flying clothes are required. Noise is minimized and conversation is not drowned by propeller and exhaust noises. The space and generous head room allow the passengers to move around and change positions. The pilot rides in the same compartment with the passengers. This adds to their feeling of security and allows conversation with the pilot.

The plane has been designed to give maximum durability and to facilitate repair work. The fuselage is made in three sections. The tubular engine mount, made of molybdenum steel tubing is pin-jointed to the center section. The center section of the fuselage, or cabin, is also made of molybdenum steel tubing. The rear section of the fuselage is of molybdenum steel, pin-jointed to the center section. The shock absorbers for tail skid and wheels are readily inspected and rewound. The tail skid is quickly removable.

The fuel system is straight gravity feed from the fuel tanks in the wing direct to the engine with a quick shut-off valve. The carburetor is below the cowling. Danger from back-firing is thus eliminated and fire risk minimized.

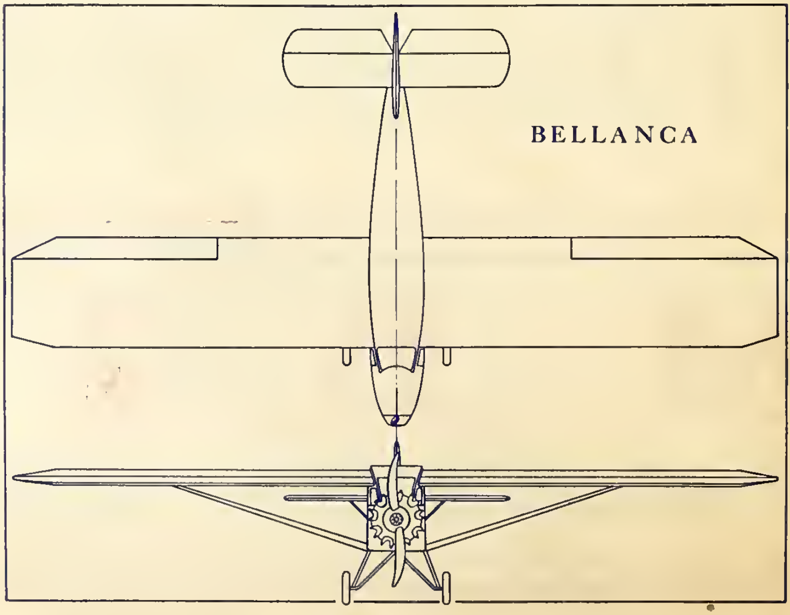
The plane takes off quickly with full passenger load. The excellent vision helps the pilot in take-off. The fast initial climb of 930 feet in 1 minute allows use of small fields.

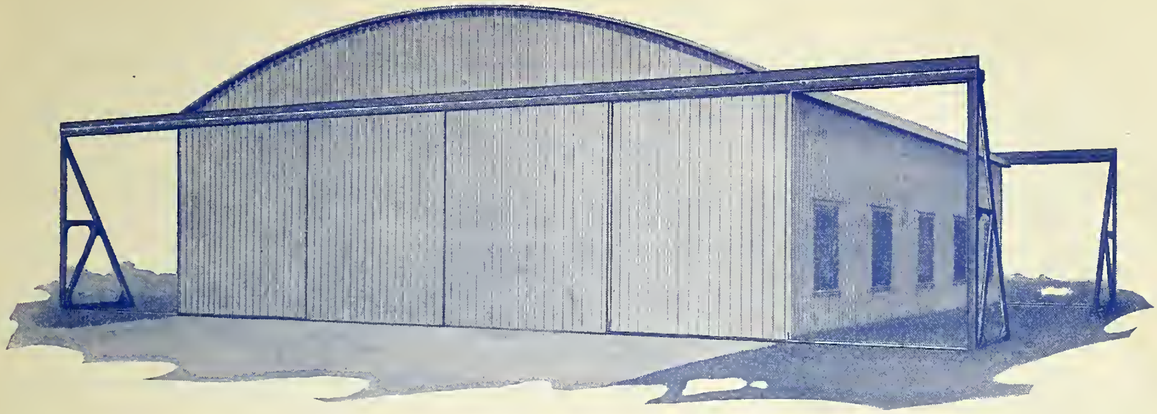
An outstanding feature of the Bellanca with its aerofoil struts, is its ability to fly at low speeds with the tail well down without the probability of "pan-caking." Landing with the tail well down gives a very short roll. The wide wheel tread and high wing and the excellent vision with tail down or up are all helpful in landing. There is no cross axle to catch in weeds or crops. The landing gear and tail skid and shock absorbers are exceptionally sturdy. The landing speed with full load is only 47 m.p.h.

For normal flying, very low h.p. is required and due to the characteristics of the engine, excellent fuel economy is the result. The plane cruises at 110 m.p.h. at 1550 r.p.m., giving a fuel consumption of approximately 11 gallons per hour or 10 miles per gallon.

The wing construction is simple and conventional. The two spars are of selected spruce, solid I beam section. The ribs are spruce, bass-wood and balsa, with triangular braces. This type of rib was tested to

(*Continued on page* 424)





This hangar is all STEEL

—*has plenty of room!*

THE above type can be used advantageously for individual hangar or large hangars for airports.

The Butler **Ready-Made** Steel Hangar is non-combustible because it is made entirely of steel. The wall and roof sheets are 24-gage and have deeply drawn paneled corrugations.

Doors are easily, quickly opened

The doors are operated without effort because they run on rails. They also open quickly for the same reason.

Plenty of light, too

The lighting facilities are very good, a most desirable feature when working on machines.

Wall and roof sheets are bolted together and to the steel frame by means of galvanized bolts. This provides a secure fastening for the sheets and avoids the noise of a loose rattling sheet. In addition, the tight fit of the bolted sheets makes our unlined Butler Buildings practically as tight as a lined building where wall and roof sheets are fastened together by nails bent around purlins and girts.

Because of its bolted construction, Butler Buildings may be taken down, moved and re-erected with practically 100% salvage.

Send for prices

It will pay you to get full information on Butler Steel Buildings. Write for complete details today.

TRADE
STEEL
BUTLER
PRODUCTS
MARK

Butler Manufacturing Company

Kansas City, Mo. Minneapolis, Minn.
Foreign Department: Kansas City, Missouri

(*Continued from page* 422)

over 800 lbs. before breaking. For a load factor of 7 only 375 lbs. test load is required. Their weight is 12 oz. each. All the ribs are the same with exception of the pairs at the tips, which are tapered. The covering is fabric treated with seven coats of dope and one of Valspar. The wings are pin-jointed to center section of fuselage.

The safety factors of the Bellanca are based on much higher loads than necessary in purely commercial service. The entire plane is made to pass inspection of the Aeronautics Branch of the Department of Commerce of U. S. A. for Air Regulations.

There are nine windows in the cabin, 3 large and one small one on each side and one large one in the front. The pilot has excellent vision as well as the passengers. The six seats in the cabin are made of reinforced plywood, upholstered with mohair and padded with extra soft rubber foam. They are spaced for ample knee room. The total space of the cabin is 140 cu. ft. not including the pilot's space, accommodating 6 people with 29 cu. ft. of baggage space.

The tail skid is of birch. It is located entirely outside of the body and can be easily attached and detached. The shock absorber is outside.

The stabilizer is non-lifting and adjustable in flight. All the tail units are constructed of spruce, bass-wood and ash, and covered with fabric doped and varnished.

Fuel tanks are welded sheet aluminum located one in each inner end of the main wings. Total capacity 64 gallons. Gravity feed without fuel pumps is used. The gasoline line and the gauge lines are of copper tubing and are located to be easily accessible. With the oil tank in the engine section, gravity fuel feed, and no water the plumbing is minimized.

The Whirlwind 200 h.p. J-5 air-cooled engine is used.

Performances

The following data was taken with pilot, five passengers averaging 175 lbs. each and 150 lbs. baggage. Tanks full. Weight of pay load 1,025 lbs.:

High speed (1,800 r.p.m.)	130 miles per hour
Cruising speed (1,550 r.p.m.)	110 m. p h.
Horse power at cruising speed	125 h.p.
Fuel consumption	11 gallons per hour
Landing speed	47 miles per hour
Time of climb to 930 feet	1 minute
Time of climb to 5,000 feet	7½ minutes

Dimensions and Weights

Wing span	46 feet 6 inches
Length	26 feet 9 inches
Wing chord	6 feet 7 inches
Height	8 feet 9 inches
Wing area	272 square feet
Fuel capacity	64 gallons
Oil capacity	5 gallons
Weight empty	1,850 pounds
Weight with 5 passengers and baggage	3,454 pounds
Weight per h.p. (full load)	17.2 pounds
Weight per square foot (full load)	12.7 lbs.

HARTSHORN'S SQUARE SECTION TIE RODS

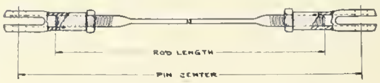
LATE in 1917 the United States Government was in need of an American source of supply for streamline tie rods. The Stewart Hartshorn Company had operated a high carbon wire mill for thirty years and produced an especially fine grade of oil tempered spring steel wire. That company offered to cooperate with the officials of the United States Signal Corps in the development of a suitable streamline tie rod for airplane bracing. After many months of experimental work, the Stewart Hartshorn Company of New York City demonstrated their ability to produce in quantity a tie rod of excellent quality. Plant equipment was necessarily remodeled, rolling mills redesigned and special heat-treating furnaces designed and erected.

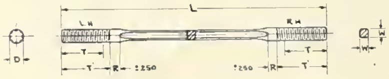
Early in 1918 the Stewart Hartshorn Company became America's first source of supply for streamline tie rods, so essential to the extensive war-time aircraft construction program. Very exacting specifications were laid down by the United States Government and, in order to meet such specifications, the rods had to undergo extremely rigid inspection.

The best grade of rod obtainable was selected—an electric furnace grade of S.A.E. No. 1045 steel.

This rod, when received from the steel mill, is first analyzed and checked chemically, then examined physically and microscopically before cold drawing and heat-treating. Rods made from this material must meet a given ultimate strength and a definite number of cold reverse bends.

While not part of the Government specification, the Stewart Hartshorn Company has always subjected each finished tie rod to a proof-load equivalent to 60 per cent of the constructed load—a test which would unquestionably reveal any hidden defects, thereby assuring the pilot absolute safety. These streamline tie rods, as described, serve as the most ideal method of bracing an airplane externally. They make possible maximum rigidity, strength and speed with a minimum of weight and vibration. Hence a ship so equipped yields more air miles per hour per gallon of gas consumed. However, a streamline section, which is especially designed to reduce air resistance, is not necessary for internal bracing.





Size	Pitch Diam. Max	Pitch Diam. Min.	D	W	Usable T	Ult. Strength Sq. Section	Ult. Strength Thd Section
6-40	.1220	.1211	.1382 $^{+.000}_{-.0018}$	.0872	1.000	1000	1150
10-32	1699	1689	1902 $^{+.000}_{-.002}$	.1157	1125	1900	2200
12-28	1930	.1919	.2162 $^{+.000}_{-.0022}$	.1338	1188	2600	3000
$\frac{1}{4}$-28	.2270	2259	.2502 $^{+.000}_{-.0022}$	.1554	1.250	3400	4000
$\frac{5}{16}$-24	.2857	.2845	.3128 $^{+.000}_{-.0024}$	.1926	1.375	5700	6550
$\frac{3}{8}$-24	.3482	3470	3753 $^{+.000}_{-.0024}$	.2366	1.500	8500	9800
$\frac{7}{16}$-20	4053	4040	4378 $^{+.000}_{-.0026}$	.2815	1625	11500	13200
$\frac{1}{2}$-20	4678	.4665	5003 $^{+.000}_{-.0026}$	.3256	1750	15500	17800

Tolerances
L ± 125
W −.000 +5%

Note All threads U S Standard Form.
T'=T Plus 4 Threads = Extreme Length of Thread

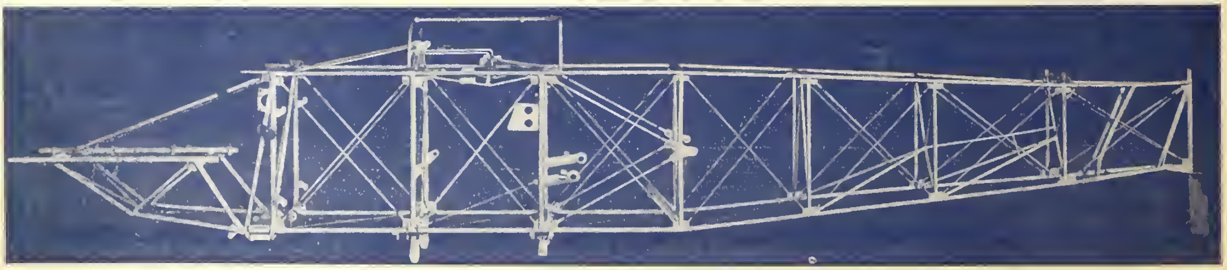
Early in the year 1926 the successful development of what is known as the square section internal tie rod was accomplished. This tie rod proved superior for internal ship bracing. The skeleton fuselage below shows the application of this square section internal tie rod to internal fuselage bracing.

These tie rods are applicable to the internal bracing of any type of aircraft and offer many advantages over the swaged type formerly employed. They, like streamline, offer maximum strength and rigidity with minimum weight.

The square cross-section of the reduced portion of the rod makes the rods extremely accessible. Wrenches may be applied at any portion along the entire length and a ship readily lined.

With the former type of rod it was necessary to apply wrenches directly under the fittings, and at the congested portions much difficulty was experienced.

At points of intersection, rigidity can be added by bringing the flat faces of the square rods together and locking them positively.



A modern steel tube military airplane fuselage in which all the tie rod bracing is accomplished with square section rods.

Standard J-1 Commercial Airplanes

THE BEST BUY IN RECONSTRUCTED WAR SURPLUS SHIPS IN AMERICA. These little ships have been thoroughly reconditioned and rebuilt in such a manner that the Department of Commerce advises that it will issue certificates for their operation. The Standard J-1 Commercial comes more nearly giving new production advantages than any war surplus airplanes ever built—speed—maneuverability—safety—economical instruction—exceptionally adapted to passenger and light express traffic. Spray lacquer finish throughout—Same finish as used on the best automobiles. Fly one and see how nicely it handles.

Our line of Regular Standards is unsurpassed. Thoroughly reconditioned—Made of the best of materials. You would only have to see our enormous stock and our rigid method of inspection, to appreciate the quality of our products—We have established a Standard of Quality which only we are able to obtain because of our superior grade of materials.

STANDARD J-1 COMMERCIAL		REGULAR STANDARDS
New complete, set up, less motor	$800	$750
New complete, with original crate, OX5	1200	1100
New complete, with overhauled OX5	1000	900
New complete, with good used OX5	900	800
New complete, with new OXX6	1500	1400

Our stock of wings is complete—In describing our class AA wings to the Department of Commerce, the Government Inspector wrote—*"Nothing can be gained by recovering them."*

New, upper wing, new covering, seven coats new dope, varnished or pigmented	each	$125
Class AA uppers, from original crates, perfect condition	"	110
Class A uppers, covered	"	100
Class B uppers, covered	"	80
Class C uppers, uncovered	"	70
New lower wing, new covering, seven coats new dope, varnished or pigmented	"	80
Class AA, war covering, from original crate, perfect condition	"	60
Class A lowers, covered	"	50
Class B lowers, covered	"	40
Class C lowers, uncovered	"	25

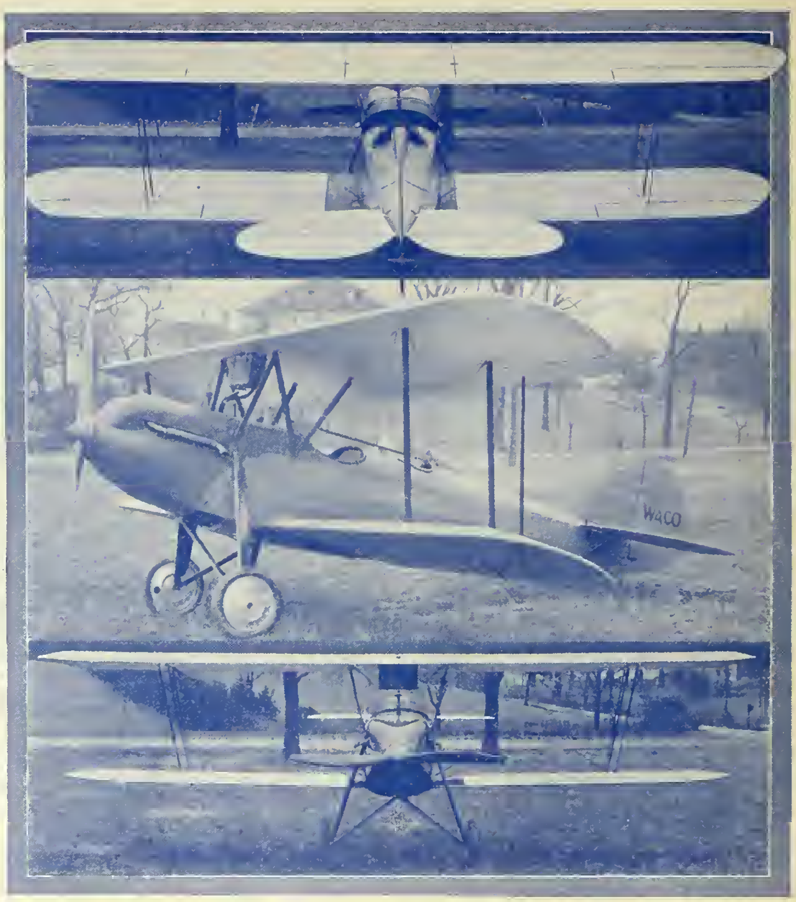
We carry the most complete stock of airplanes, motors, parts and supplies in America—Everything for the Aviator.

Write for Free Illustrated Catalogue

Nicholas-Beazley Airplane Co., Inc.

Marshall *"We Will be Here Tomorrow"* **Missouri**

OX5 ENGINED WACO-TEN COMMERCIAL AIRPLANE



Views of the new Waco Ten, produced by the Advance Aircraft Company.

THE new Model Ten Waco, now being produced by the Advance Aircraft Company of Troy, Ohio, has some very interesting features. The streamlining is better than the Waco-9, and after a long series of comparative tests shows a high speed of about ten miles an hour more than the Waco-9, takes off in the same distance and time and climbs even faster.

It has an easily detachable bottom pan for draining oil and working on the carburetor.

The hydraulic oleo landing gear has no rubber or parts of any kind that wear or require attention. This type of landing gear makes it impossible to bounce the ship on landing for there is no recoil. The split axle type undercarriage is used with no secondary structure outside to carry the axle or shock absorbers. The leaf spring tail skid has no shock cord or rubber and is fitted with a detachable shoe.

Fuselage struts are braced throughout without wires. No longerons or struts pierced by bolts or rivets, for attaching cowls, seats, etc.

At the passenger seats the fuselage is wider than the Model Nine. A large door is located at the passenger seat with a double-width walk on the same side. Cockpit cowls are built higher and windshields placed so as to afford more protection for both pilot and passengers. Seats are made to conform to a natural comfortable sitting position. They are heavily cushioned. The front cockpit is entirely lined.

The adjustable stabilizer is operated by controls at the side of the pilot and in such a way that the movement is quick and in the same direction as the control stick. The ship can actually be flown by the stabilizer totally disregarding the elevators.

Double ailerons are differentially operated and separately connected. The chord is narrow and very light on the stick. They are very effective and fast even at stalling angles. All controls with the exception of rudder are tube operated.

The Model Ten may be had either with or without the center section with tank installation of 17½ gallons.

The main fuel tank holds 37 gallons of fuel for 5½ hours, and for 8½ hours with the center section tank.

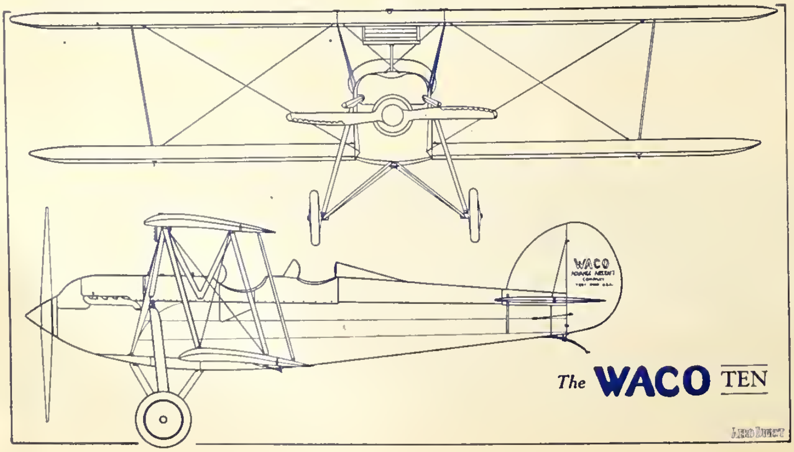
Wheels are covered with spun aluminum disks; the fuselage finished Benz Grey with a duotone effect, the cowls being finished several shades darker. Wing and tail surfaces are finished in aluminum color.

Streamline wires, dual control and radiator shutters come as standard equipment.

Production will include OX5, OXX6, Hisso, and Whirlwind motors.

Complete data on performances is not being given out at this time as the policy of the company is to put this ship through a long series of performance tests showing the results with absolute accuracy. It is believed that the actual performances obtained will considerably better the conservative predictions made at this time.

One of these new machines will be flown to Washington by Charles W. Meyers who will demonstrate it at the All America Aircraft Show.



PRIZES FOR PAPERS ON ARC WELDING

THE American Society of Mechanical Engineers has accepted the custody of $17,500 offered by The Lincoln Electric Company of Cleveland, Ohio, to be awarded by the Society in a world-wide competition for the best three papers disclosing advancement in the art of arc welding. Three prizes will be awarded—$10,000, $5000 and $2500.

The desire of the Lincoln Electric Company is to improve the art of arc welding and to indicate the advantages and economies to be gained by its use. Rules of the Competition may be obtained from the A.S.M.E..

The "ALL-IN-ONE" AIRCRAFT POLICY

or separate "Independence" policies, will meet all the insurance requirements of those engaged in any branch of the Aircraft Industry

THE INDEPENDENCE COMPANIES
Home Offices—PHILADELPHIA
CHARLES H. HOLLAND, President

These Companies maintain Human Relations with their Agents, Brokers and Policyholders

The late Lt. Comdr. Davis and the ship he was to have flown across the Atlantic.

THE TRANSATLANTIC PLANE "AMERICAN LEGION"

THE "American Legion" in which Lieutenant Commander Noel Davis and Lieutenant Stanton Wooster will soon attempt to fly from New York to Paris for the $25,000 Orteig prize, has been undergoing a series of flight tests at Langley Field. The plane, a special "Pathfinder," constructed by the Keystone Aircraft Corporation and designed by C. Talbot Porter, chief engineer of the company, is a triple-engined biplane, designed along the lines of the Keystone "Pirate" twin-engined light bombing plane.

A tank containing 900 gallons of gasoline is located in the center of the welded tube steel fuselage in the nose of which is mounted a 225 h.p. Whirlwind engine. Tube steel wing sections attached to the side of the fuselage, forming part of the lower wing, are fitted with two Whirlwind 225 h.p. engines, giving a total of 675 h.p. In the upper wing section are three tanks containing the gravity supply gasoline feed for the three engines. Each of these upper wing tanks holds approximately 200 gallons of gasoline.

An oleo hydraulic landing gear and tail skid are employed, the latter being fitted with control wires so that the ship can be steered while taxiing.

For commercial use the fuselage fuel tank will be eliminated and the space it occupies will be refitted for carrying twelve passengers. Under these conditions the plane will have a speed of 120 m.p.h., pay load of 4,500 pounds, and a cruising range of 15 hours or 1,150 miles.

The plane will carry 1,500 gallons of gasoline (9,000 pounds), 100 gallons of oil (800 pounds), pilot and assistant pilot (400 pounds), equipment 480 pounds; making a total of 10,680 pounds.

The wings are of thick section giving high and quick lift.

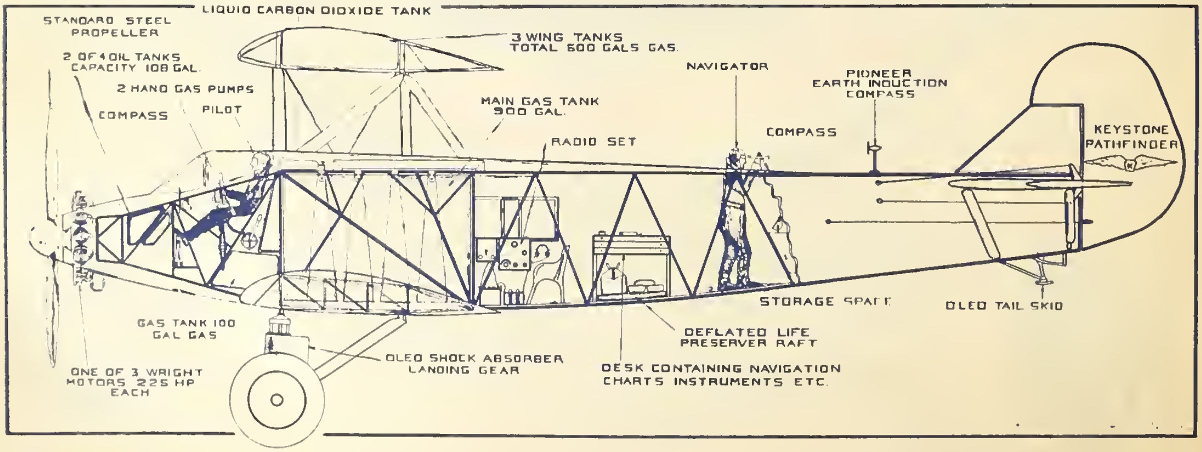
The pilot's compartment is unusually roomy. It has two large seats, and only one control wheel, which may be flipped back from one seat to the other, thus eliminating one control wheel and giving more room.

The plane has double ailerons and balanced rudder and flippers. The stabilizer is adjustable so that under varying load conditions the balance of the plane may be preserved without strain on the controls. The fin is adjustable so that if one motor is cut out it may be compensated for by air pressure on the fin.

The specifications are:

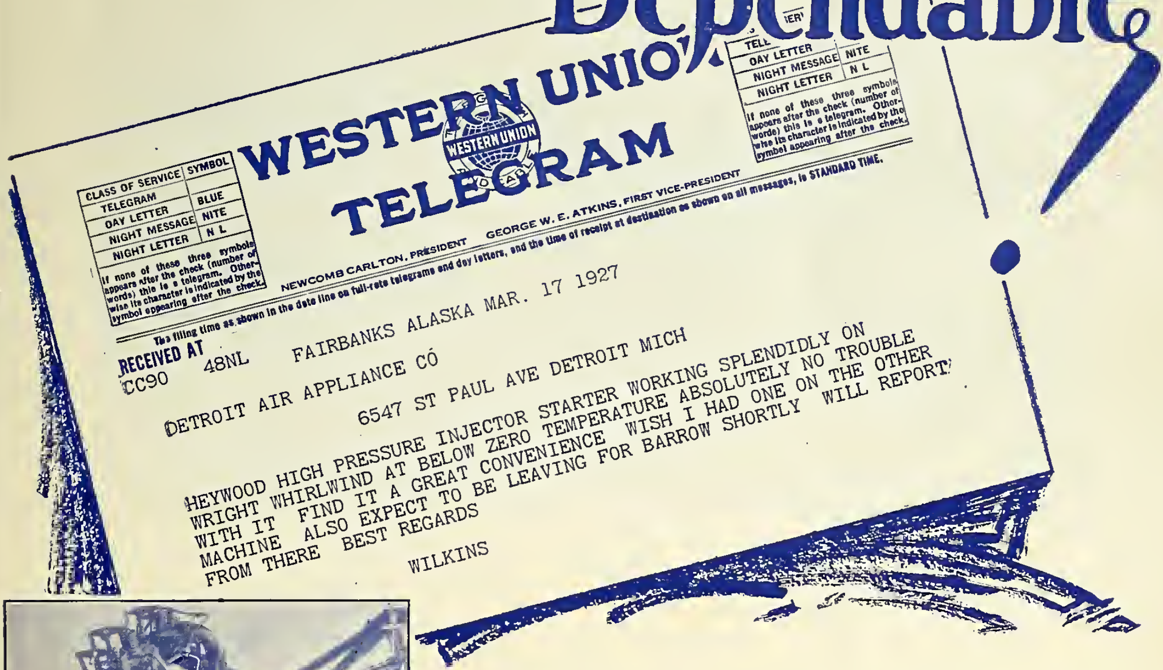
Wing span	67 feet
Overall length	44 feet 11¾ inches
Height	15 feet 6½ inches
Wing area	1,500 square feet
Weight empty	5,878 pounds
Weight loaded	16,558 pounds
Wing loading	14½ pounds per square foot
Power loading	25 pounds per h.p.
Maximum speed, loaded	100 miles per hour
Landing speed	56 miles per hour
Rate of climb, loaded	500 feet per minute
Range (with 1,500 gal. gas),	4,000 miles

As we go to press, word was received that both Lt. Cmdr. Noel Davis and his alternate pilot, Lt. Stanton H. Wooster, had been killed during a test flight of the "American Legion" plane.


LIQUID CARBON DIOXIDE TANK
STANDARD STEEL PROPELLER
3 WING TANKS TOTAL 600 GALS GAS.
2 OF 4 OIL TANKS CAPACITY 108 GAL.
NAVIGATOR
PIONEER EARTH INDUCTION COMPASS
2 HAND GAS PUMPS
MAIN GAS TANK 900 GAL.
COMPASS
PILOT
COMPASS
KEYSTONE PATHFINDER
RADIO SET
STORAGE SPACE
OLEO TAIL SKID
GAS TANK 100 GAL GAS
DEFLATED LIFE PRESERVER RAFT
OLEO SHOCK ABSORBER LANDING GEAR
DESK CONTAINING NAVIGATION CHARTS INSTRUMENTS ETC.
ONE OF 3 WRIGHT MOTORS 225 HP EACH

The Keystone Pathfinder "American Legion" which was to have been used by Lt. Comdr. Davis for the New York-Paris flight.

Where Starting Must Be Dependable



CLASS OF SERVICE	SYMBOL
TELEGRAM	
DAY LETTER	BLUE
NIGHT MESSAGE	NITE
NIGHT LETTER	N L

If none of these three symbols appears after the check (number of words) this is a telegram. Otherwise its character is indicated by the symbol appearing after the check.

WESTERN UNION TELEGRAM

NEWCOMB CARLTON, PRESIDENT GEORGE W. E. ATKINS, FIRST VICE-PRESIDENT

TELL
DAY LETTER NITE
NIGHT MESSAGE N L
NIGHT LETTER
If none of these three symbols appears after the check (number of words) this is a telegram. Otherwise its character is indicated by the symbol appearing after the check.

The filing time as shown in the date line on full-rate telegrams and day letters, and the time of receipt at destination as shown on all messages, is STANDARD TIME.

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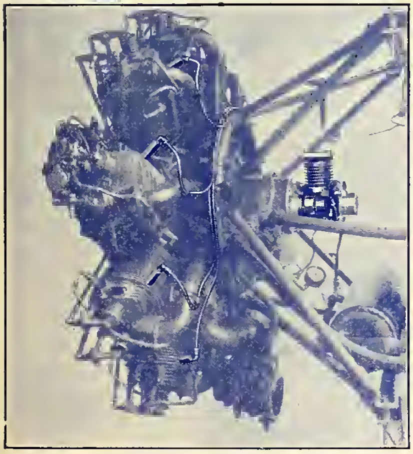
DETROIT AIR APPLIANCE CO

6547 ST PAUL AVE DETROIT MICH

HEYWOOD HIGH PRESSURE INJECTOR STARTER WORKING SPLENDIDLY ON WRIGHT WHIRLWIND AT BELOW ZERO TEMPERATURE ABSOLUTELY NO TROUBLE WITH IT FIND IT A GREAT CONVENIENCE WISH I HAD ONE ON THE OTHER MACHINE ALSO EXPECT TO BE LEAVING FOR BARROW SHORTLY WILL REPORT FROM THERE BEST REGARDS

WILKINS



Showing installation of Heywood High Pressure Injector starter on Wright Whirlwind Motor. Weight 25 lbs.

Pilots, whether in arctic cold or tropic heat, know the absolute necessity of dependable starting.

Wilkins prepared for his polar flight by installing the Heywood High Pressure Injector Starter on one of his planes realizing its dependability and instant starting features. His telegram confirms his judgment in this selection.

Eddie Stinson, too, appreciates and recommends this never failing starter as the highest type of aircraft equipment.

Simple pressing of button, conveniently located on dash, producing a positive, instant start through high compression and forced carburetion are features that have earned this enviable recognition of supremacy.

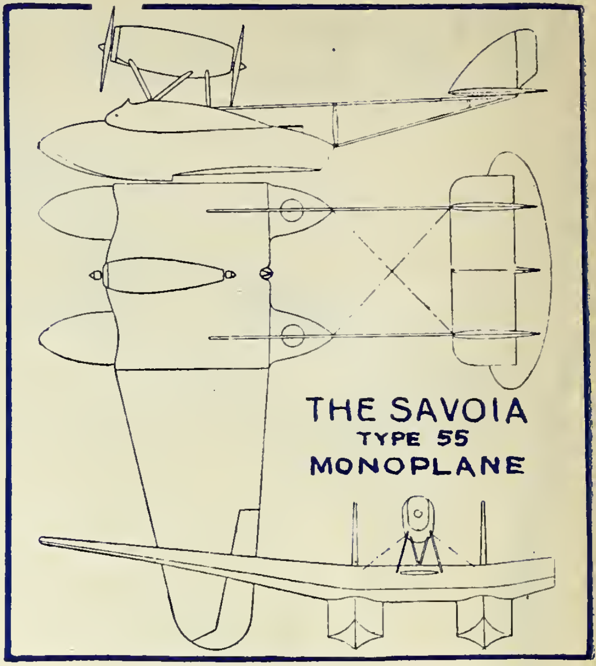
Write today for complete information, technical data, prices, etc.

DETROIT AIR APPLIANCE CORP.

6547 St. Paul Ave. :·: :·: Detroit, Mich.

MANUFACTURERS OF HEYWOOD HIGH PRESSURE INJECTOR STARTER

THE "SANTA MARIA"



DE PINEDO'S four-continent flight came to a sudden interruption by a mishap which occurred on April 6th at Roosevelt Dam, Arizona. The plane was being serviced with fuel and oil when a thoughtless spectator threw an ignited match on the oil-coated surface of the water. In few seconds the pride and hope of the famous flyer, the "Santa Maria" of 1927, was a mass of flames. A fragil consolation to the aeronautical world may be the fact that it was not an airplane accident but mere, commonplace, every day negligence. Judging by the newspaper accounts it would seem that while the tanks were being filled with fuel and oil there were no fire extinguishers held in readiness and as a result the fine seaplane which made so many successful flights was lost in a few minutes.

The "Santa Maria", Savoia S-55, is one of the many excellent designs of Mr. Marchetti, technical director and designer of Societa Idrovolanti Alta Italia (SIAT) which produces "Savoia" airplanes. It is a stock model of a special series of 14 airplanes purposely built for long flights. It is a twin-hull cantilever monoplane flying boat with wing tapered both in plan and thickness.

The power plant of the "Santa Maria" consists of two Isotta-Fraschini "Asso" water-cooled engines rated at 500 h. p. each. They are installed in tandem with single front radiator and drive two two-bladed wooden propellers. The motor mounting is simple, rugged and easily detachable.

The control surfaces, with the exception of the rudder, are balanced by special projecting portions and are of efficient form and section. The horizontal and vertical tails are mounted on special booms and are rigidly braced by outside tie rods. The horizontal surfaces are adjustable in flight from the pilot's cockpit so that easy piloting is possible for different conditions of loading. The pilot's cockpit is located in the leading edge of the deep center section in the plane of symmetry of the airplane.

The hulls are of the short NC type with a hollow flat bottom. They are of single step type and have good lines.

The Savoia S-55 was built with the view of obtaining a strong serviceable craft, capable of withstanding hard service usage even at a sacrifice of weight. For this purpose the bottom of the hulls was reinforced with a third layer of planking, instead of the usual two layers, and an extra double layer of waterproof fabric.

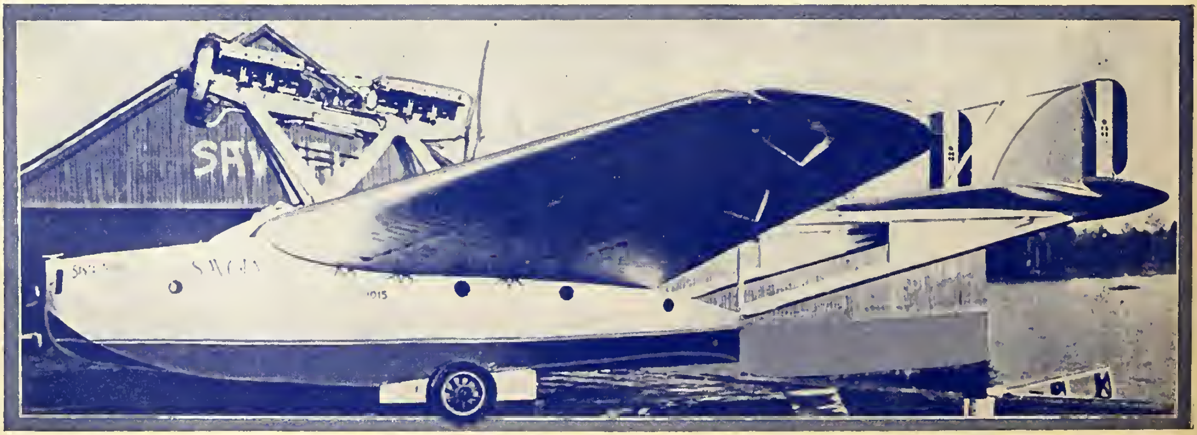
In addition the plywood wing surface was covered with fabric, the ribs reinforced, and a special protection was made for the outriggers supporting the tail. Special consideration was given to secure watertightness of all the openings for which purpose four hatches are provided for access into the hulls and, if necessary, special sliding doors on the center section can be used by the navigator or mechanic.

The fuel system and its arrangement is an object of special study. There are altogether twelve tanks, eleven of which are for fuel and one for oil. The fuel system is arranged in such a way that there are numerous combinations possible to minimize the importance of any part of the line clogging or leaking; even with one half of the installation out of order flight is possible with the remaining half. It is possible also for the mechanic to service the motor with oil and water in flight.

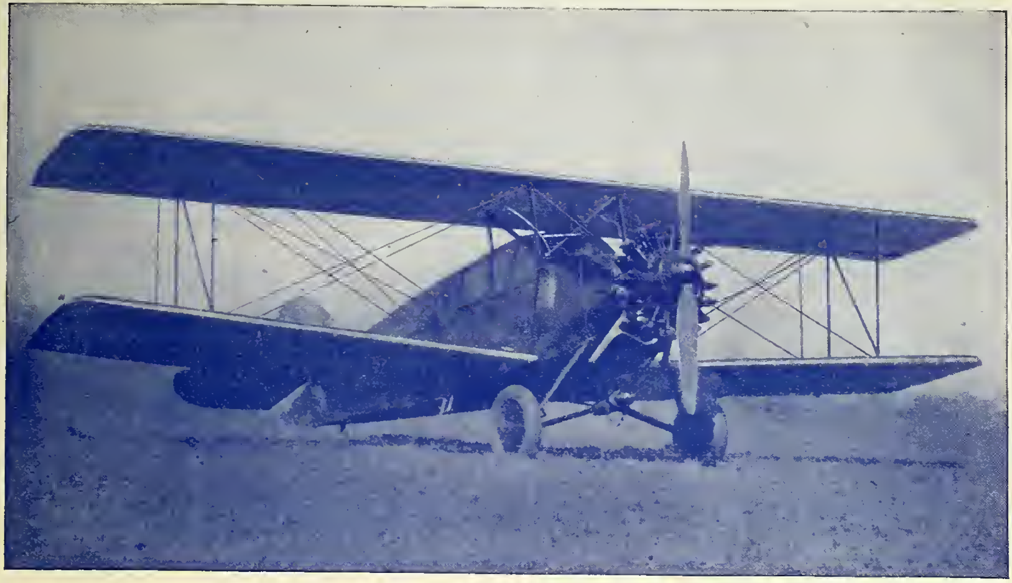
In addition to ordinary airplane equipment the Savoia S-55 is supplied with anchors, gaffs, fresh water distiller, collapsible raft, etc.

General specifications are as follows:

Power	2 Isotta Fraschini 500 h.p. each
Wing span	78.8 feet
Length, overall	52.5 feet
Height, overall	16.4 feet
Wing area	990 square feet
Stabilizer area	113 square feet
Total aileron area	77.5 square feet
Elevators area	80.7 square feet
Fin area	45.2 square feet
Rudder area	39.8 square feet
Maximum speed with gross flying load	123 m.p.h.
Maximum speed with 4410 lbs. of useful load	130 m.p.h.
Cruising speed	100 m.p.h.
Landing speed	56 m.p.h.
Fuel tank capacity	335 gallons
Oil tank capacity	77 gallons
Glider unit	3190 pounds
Power plant	2760 pounds
Weight empty, with water and instruments	10220 pounds
Disposable load, maximum	7720 pounds
Gross flying weight	17940 pounds



The "Santa Maria," De Pinedo's Savoia twin-hull monoplane flying boat which will be replaced by the "Santa Maria II."



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- Marmon Motor Car Company
- Department of Commerce
- Wayco Aerial Taxi Company
- Horace E. Dodge, Pres., Dodge Boat Works
- Edward F. Schlee, Pres., Wayco Oil Corp.
- John Duval Dodge, Pres., Dodgeson Motor Car Co.
- Capt. George Hubert Wilkins, famous explorer
- Detroit News
- R. C. Durant, automobile racer and financier
- Frank W. Blair, Pres., Union Trust Co.
- The Wise Birds Assn.
- Newton S. Skillman, Pres., O & S Bearing Co.
- Charles B. Bohn, Pres., Bohn Aluminum and Brass Corp.
- William B. Stout, airplane designer and mgr., Airplane Div., Ford Motor Co.
- Carl H. Keller, Pres., Contractors' Equipment and Supply Assn.

BEYOND compare in comfort, safety and speed, Stinson planes have set the standard for modern aircraft.

They were first to combine brakes on the wheels, starter on the motor, sound and fireproof heated cabins, luxurious upholstery and inherent stability so marked that they fly themselves in the air.

Other manufacturers have been quick to adopt these features developed as a result of the practical experience of Edward A. Stinson, who has flown more miles, trained more pilots and tested more planes than any other man.

Stinson-Detroiter sales lead their field, because everywhere the Detroiter is accepted as the supreme embodiment of comfort, economy and efficiency.

Let us tell you how the Detroiter can solve your problem, be it air mail, aerial taxi service, business, pleasure, photographic or training.

Stinson-Aircraft Corporation • Detroit, Michigan

Factory: Northville, Michigan

WESTERN NEWS

Passengers and pilot of the Continental Motors plane at Los Angeles.

Left to right: Councilman Hughes, chairman of Los Angeles Airport Committee; W. R. Angell, vice-president, Continental Motors; Councilman Criswell; Lt. Pond, pilot; H. R. Brashear, chairman Aeron. Committee, Los Angeles Chamber of Commerce; J. B. Webster, manager, Rogers Airport.

FIRST COMMERCIAL AIRPLANE SHOW

By Allen S. Patterson

THE Commercial Airplane Show held at Rogers Airport, April 3rd and 4th, was the first of its kind held in this country. When I say commercial, I mean strictly what the word implies as no Army or Navy equipment was shown. I hope this did not get the boys on the shady side of the Army or the Navy but we simply must give this commercial game a little stimulant, as it very nearly became trampled under the feet of political blah-blah, or drowned in the swirling waters of the Army and Navy dogfights during the past few years. Consequently we ask our friends of the service to forgive us for not sending an invite to this little party.

The show officially opened the new field at Rogers Airport, now located on Angelus Messa Drive, Los Angeles. The erection of the last of the hangars, eight in number, accommodating twenty-two ships in all was just completed. They are painted cream white, and I will say, for the benefit of visiting pilots, that I have not been able to get up high enough or far enough away but that they are still in my normal focal range, which at times is not what it should be.

But as I was saying—the dogs were locked up for the day and the show began at two o'clock Saturday afternoon by the arrival of the Continental Motor Company's tri-motored Fokker, piloted by Lieut. George Pond and Rene LaBadie. Such a display of enthusiastic interest over such a "little" plane was something marvelous to see. There were also a few thrills as the steel propellers miraculously missed becoming meat grinders.

From its luxurious cabin came W. R. Angell, vice-president of the Continental Motor Company; Harry Kline, advertising manager of the company; Messrs. Hughes and Criswell, Los Angeles City Councilmen; H. R. Brashear of the Los Angeles Chamber of Commerce; Billy Mathis of the *Los Angeles Examiner* and Jim Webster, manager of Rogers Airport.

In spite of the "unusual" weather, as the days were overcast by low clouds, a record-breaking crowd of twenty thousand people milled in and out for the two days and seemed to be keenly interested in the mis and takes of our coming engineers and designers. Even a few old war birds could be heard here and there through the crowds telling their sweet young things all about how they won the war "in one of those Camels over there." I think I had the only one on the field in my mouth!

The commercial visitors were lined up in front of the hangars,—an imposing row of future hopes headed by two Universal Fokkers from the Aero Corporation of America, flown in by Jack Frye; two Wacos from the American Aircraft Company at Clover Field, flown by Doc. Whitney and Frank Clark; an Eaglerock; a Kinner Airster powered with a new Kinner radial motor; Back, of Clover Field, with his new cabin biplane powered with a SuperRhone; Fred Hoyt with the new Stearman biplane; a Ryan monoplane flown by Mr. Edwards, sales manager for the Ryan Airlines of San Diego; a new monoplane built in Brea, California, piloted by C. Clark; Boyd Shelton brought the Hisso biplane just completed for D. E. McDaneld of Pasadena; a Romair built by Waterhouse Aircraft, Inc., Glendale; and one Travel Air belonging to Rogers Airport, besides the usual display of the new commercial Jennies built by—Oh, well, what's the difference?

At intervals during the two days the boys demonstrated their choices to the satisfaction of everyone. Lieut. Pond in the Fokker made one trip to Riverside on Saturday afternoon returning after dark, so demonstrating the efficiency of the landing lights which the big ship is equipped with.

The surprising part of the whole affair is that the crowds came and were held only by the display of new type planes. There were no air races, parachute drops, or any of the old means of thrills that were thought necessary to draw such a gathering, which goes to prove that the public must be really interested in seeing something entirely sane being done in aviation in regards to its future place as a national industry.

This little experiment is just a beginning and hopes are that it will be carried on in many other parts of the country. The cost of such a show is comparatively nothing and the gains are all. I have heard more aviation talk midst the everyday city dust trodders since that event than ever before.

COMMUTING BY PLANE

ELWOOD LLOYD, financial editor of the Los Angeles *Evening Herald*, has just bought a Ryan M-1 Monoplane, which he will use to commute daily between his country home at 1,000 Palms and Los Angeles, a distance of 100 miles each way.

Mr. Lloyd is keeping his plane, while in Los Angeles at the Rogers Airport, which is just five miles from the *Evening Herald* office. His motor car meets him at his arrival, takes him back and forth to the office.

The Continental Motor Company's trimotored Fokker at the Commercial Airplane Show, Rogers Airport.

RYAN

M2 MONOPLANES

150 h. p. Hisso-equipped,	$3750
180 h. p. Hisso-equipped,	$4000
Whirlwind-equipped,	$8100

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FIVE-PLACE CLOSED PLANE

180 h. p. Hisso-equipped,	$5,100
Wright Whirlwind-equipped,	9,700

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Weighing in over 1200 pounds of air mail for the Western Air Express.

CALIF. CONFERENCE

By Dr. T. C. Young,
Chairman, Aeronautical Unit of the Calif. Development Ass'n

THE Aeronautical Division of the California Development Association will hold their Annual Conference at San Francisco at the Whitcome Hotel on May 6th.

A delegation of fifteen ships from the Southland will assemble at the Western Air Express Field in Los Angeles from San Diego carrying noted Army, Navy and civilian officials. They will be joined by fifteen or twenty more ships consisting of National Guard and commercial ships.

The ships participating in this caravan will be the Pacific Air Transport from the Ryan Commercial Airplane Corp., the Eaglerock and the Fokker Universal from Aero Corp. of Calif., the Waco from American Aircraft Corp., Travel Air from Lyle-Hoyt Corp., the Douglas from Western Air Express, the McDaniel from Pasadena, the Kinner Airster from the Kinner Airplane and Motor Corporation and others.

One of the features of this caravan is the Douglas Transport, the largest commercial ship in the United States, and the Kinner Airster known to be the smallest commercial ship, which will fly side by side.

The first stop will be made at Coalinga, and the second at the new municipal field in South San Francisco.

Colonel H. H. Blee from the Department of Commerce, Professor E. P. Lesley of Stanford University, Harris Hanshue of Western Air Express, R. E. Fisher of the California Development Association and other noted speakers will participate in the program at the opening of the Conference at 10:00 a. m., May 6. At 12:00 o'clock those present will be guests of the San Francisco Chamber of Commerce at luncheon.

At 10:00 a. m. on May 7th, the dedication services of the new San Francisco airport will be held, and immediately following the flying caravan will leave for Sacramento where they will be guests of the Sacramento Chamber of Commerce for luncheon. A stop of two hours will be allotted for inspection and other activities.

They will leave Sacramento at 2:00 p. m. and land at the Stockton Municipal Field at 3:00 p. m., where a stop of one hour will be made for Stockton aero activities. Leaving there at 4:30 p. m. they will land at Fresno where they will be entertained by the Fresno Chamber of Commerce.

The next morning the caravan will leave Fresno and arrive in Bakersfield for luncheon under the auspices of the Bakersfield Civic Commercial Association. Following the luncheon the caravan will break up, each returning to their respective homes.

The mayors and Chamber of Commerce presidents of all cities visited by this caravan are invited to be transported as guests over the route in the Douglas Transport.

THE NEW KINNER AIRSTER
MADE COMPLETE IN CALIFORNIA
3-Place, Powered with 5-Cylinder Air-Cooled 100 H.P. Motor
Weight 900 Lbs.—Carries 800 Lbs.
LEIGHROY (DUSTY) MILLER
PORTERVILLE CALIFORNIA
Distributor for the Northwest
Write for territory.

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ROGERS AIRPORT
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Largest in the West

Wanted At Once!-100 Men-Training Starts Immediately -ACT!

Since Government regulations have gone into effect, there has been a great demand for **expert** pilots and ground workers who can pass the U. S. Government tests

We are prepared to take on 100 more students in our $200,000 Aviation and Aeronautical School —the biggest in the West. Day and Night Classes. Send at once for FREE Booklet. This is "One Big Chance in a Million." Earn While You Learn. Vocational department helps you find a job. Experts train you under **actual conditions.** Don't put it off! Act now! This is the big moment.

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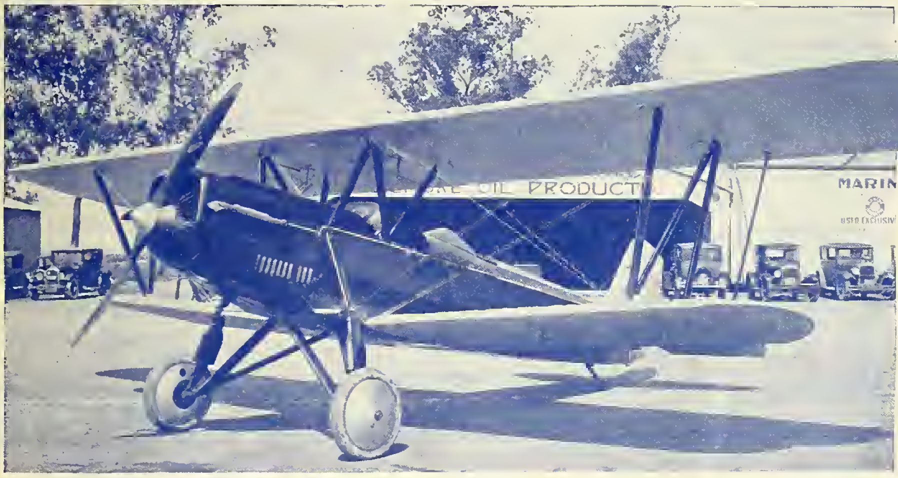

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STEARMAN Aircraft are built with the conviction that economy in the operation of airplanes is essentially a matter of a low ultimate cost per flying hour and while these hours accumulate that the pilot and passengers should have every feasible comfort and convenience. An airplane of unprecedented refinement and durability is the outgrowth of this policy.

Additional details and data on request

STEARMAN AIRCRAFT INC.

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CONTACTS

By Frank E. Samuels

BILL HUNT has been forced by a large volume of business to move his shop, for the overhaul and construction of planes, to the Northwest Corner of Riverside and Redondo Boulevards. The shop now occupied has about 6,000 square feet of floor space. Modern machinery is being installed to take care of his increased business and for the construction of a commercial plane after designs by Mr. Hunt.

The following enrollment of students for April is reported: O. Burkhart, Otto Rhoedder, Lester Colombo, Guido Rhoedder, M. Gregory, C. Smith, Ralph Baker, Walt. Payne, M. H. Gardner, Roy Litzenberg, Dean Spencer, A. Payne, W. Baker, C. Fritzen and J. Miller. All instructions are given by Roy Payne and Mr. Hunt, who has been actively connected with aviation for the past 15 years. The equipment consists of two JN4D planes, one Whirlwind special job, and a DH4B plane is to be added for advance training and mapping work. They have a photographic contract now on hand calling for approximately 80 hours flying.

WILLIAM DOWLING, of Dowling and Morris, Fullerton, is going over to Globe, Arizona, for the Golden Jubilee of the Elks which is held there four days beginning April 20; Mr. Dowling has the concession for passenger flights during this convention, and is taking his Waco with him. Mr. Dowling's firm distributes Wacos in Orange County, California.

SOME of the sceptics should visit the plant of the International Aircraft Corp, at Long Beach. For efficiency, system, neatness and all that goes to make up a high class plant, few will excel. The latest machinery is being installed as quickly as necessary, and every part of the plane, except the motors, is made at the plant. All parts are interchangeable for each style ship built and every by-product is used to advantage.

As I am writing this, Frederick (Doc) Whitney is starting out from Clover Field, Santa Monica, as a passenger in one of the big Douglas Transports, five of which have just been delivered to the Army Air Corps by the Douglas Company, and are being ferried across the country. Doc Whitney, being a reserve Army flyer, secured permission to take the trip in one of them. He is combining business with pleasure, as it is his intention, while east, to visit the Advance Aircraft plant and make arrangements for the shipment of two more car loads of Waco's for immediate delivery, his last two car loads being entirely sold out. Since J. B. Alexander became sales manager of the American Aircraft Corporation sales have been steadily climbing, until at present there is not a new plane at the hangars for demonstrating purposes.

G. A. EICHELBERGER, a former automobile dealer in Fresno, California, has recently formed an aviation company to be known as Fresno Airways. This company has taken the agency for the Waco airplanes in the Fresno territory, and has already sold six of these airplanes.

PACIFIC AIR TRANSPORT, who has the mail contract between Los Angeles and Seattle, is equipping the line with cabin planes, catering to passengers between Los Angeles and San Francisco. Last week they took delivery on their first Travel Air cabin monoplane and Mr. Gorst, president of Pacific Air Transport, has bought and taken delivery of a Fokker Universal from the Aero Corporation of California field.

NICK GALLOWAY, formerly secretary of the Burdett Airlines, Inc., having struck rich pay dirt at his mine in Death Valley, has resigned from the corporation and will devote his entire time to developing his mine. Burdett Fuller bought Galloway's interest in the corporation.

AN UNEXPECTED GIFT

THE Aero Corporation of California recently presented to F. E. Samuels, western representative of Aero Digest, a beautiful pair of sterling silver wings, in appreciation of the success that the Western News section of Aero Digest has attained, partly through the energy and labor of "Old Man Samuels".

The wings are a replica of those worn by the officers of the Corporation, with their trade mark A. A. C. engraved on the face, the reverse side being engraved "To Frank E. Samuels, Honorary Pilot, From the Members of the Aero Corporation of California, March, 1927."

The presentation was made by Monte Edwards, vice-president of the corporation.

STUDENT FLYERS

Our chief instructor says:

"The hardest thing to find today is a GOOD pilot"

Come to California where every day is a flying day and learn this most fascinating work.

Only new WACOs used for training.

American Aircraft Corporation
Third Floor, Merritt Building
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The New

"THE SIGN OF KINNER A PERFECT PLANE

Equipped with the New Kinner 100 h. p. 5 cyl., radial air-cooled motor. Makes an ideal 3-place general utility airplane for every-day use.

Weight of ship complete, 850 lbs. Weight of motor only 211 lbs.

Ship complete, $2,850.00. Motor only, equipped with two Scintilla magnetos and Zenith carburetor, $1,425.00.

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A view of the International Aircraft Corporation's erection department

BUILT-TO-A-STANDARD—
NOT-TO-A-PRICE

TO build planes that will fly is no longer an achievement. To build them equal to the varied conditions of the air, of the landing field and commercial demands, with the proper pay-load and safety factor ample for every condition is a wholly different task. Half knowledge is insufficient.

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Edwin M. Fisk, *Designer*

INTERNATIONAL AIRCRAFT CORPORATION
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The International dealer policy is as progressive as their products. It will pay you to investigate.

AERO CORP. OF CALIF. FOKKER DISTRIBUTORS

An announcement of interest to the whole aeronautical industry, and of especial significance to aviation in the west, is that of Richmond A. Edwards, vice-president of the Aero Corporation of California, that his company has bought out the West Coast Airways, and has taken the Pacific Coast distributorship for Fokker airplanes.

Edward Hubbard of Seattle, Washington, formerly held this valuable franchise, but since the securing of the air mail contract in conjunction with the Boeing Airplane Company, he has been induced to release his interests, and after weeks of negotiating, the Aero Corporation of California has now been successful.

It is the plan of the corporation to establish sub-dealers throughout their territory. Being Southern California and Arizona distributors of the Alexander Eaglerock, they already have several dealers in the territory.

Almost simultaneous with the securing of the Fokker franchise, the Aero Corporation sold two Fokker Universals.

One of these planes was sold to Mr. Dunning, an oil operator of Ft. Worth, Texas. Delivery was taken in Los Angeles, and Jack Frye, president of the Aero Corporation, flew Mr. Dunning and guests, one of whom was the vice-president of the Pacific-Southwest Trust and Savings Bank of Los Angeles, to Ft. Worth in 13½ flying hours.

The second Fokker Universal was sold to Pacific Air Transport, operators of the Seattle-Los Angeles air mail route. Vern C. Gorst, president of Pacific Air Transport, took delivery of the ship on April 14th, and the Fokker left the Aero Corporation field on that day for a tour of California, Oregon and Washington.

The Aero Corporation has placed additional orders for Fokkers. They intend to operate the airlines formerly operated by the West Coast Airways Company, in addition to establishing new airlines.

HOLLYWOOD AIR CLUB WELCOMES AMUNDSEN

By Frank E. Samuels

A very instructive and pleasant evening was spent by your Western Representative, at the Shrine Auditorium, Los Angeles, April 7th. The occasion was Captain Amundsen's lecture, "By Dirigible From Rome to Teller," which was given under the auspices of the Hollywood Aero Club.

Representatives of the different producing organizations, flying fields, air mail contractors, flying schools and other branches of the industry, as well as many of our leading citizens in all branches of industry and art, attended the lecture.

Burr McIntosh spoke briefly on the aim and objects of the Hollywood Aero Club.

Captain Amundsen related intimate details of the voyage over the Pole, his lecture being supplemented with photographs and motion pictures.

After the lecture Captain Amundsen presented a flag to the Hollywood Aero Club, which was accepted by Roger J. Adams, president of the club.

COMBINATION HANGAR AND FIELD SHOP

The housing problems of airplanes in the last few years has become of vital importance. The Alexander Aircraft Company has surmounted this difficulty by producing, with the aid of its own engineers, a combined hangar and field shop of high practicability and low cost.

The hangar consists of three one ship units combined under one roof. Each unit is partitioned off and has its own sliding doors making the equivalent of three individual hangars. The entire front of the hangar may be opened or any individual unit may be opened without interference with the other two units. The ships are tailed into their individual unit leaving adequate room to either side of the tail for shops, lockers, stoves, etc. One unit is fitted up as a rigging hangar with plaster board interior walls, a cement floor, a screened off shop, lockers, stove, benches, etc.

Plenty of Truscon steel sash are in the walls to allow an abundance of light and ventilation. The roof is sheathed with one inch boards over which is placed Buffalo Elaterite roofing. The walls are constructed of 2" x 4" studding and galvanized corrugated iron. The roof is trussed which allows full floor space. The posts are set in concrete piers and anchored with U bolts.

The entire cost of the hangar is very reasonable considering the type of building. The Company will be glad to aid further its fellow aviation enthusiasts who are confronted with this housing problem.

PILOTS CRY FOR IT

Apologies to CASTORIA already accepted—Jack Flipper.

"Above All!"

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AERO CORPORATION
of
CALIFORNIA

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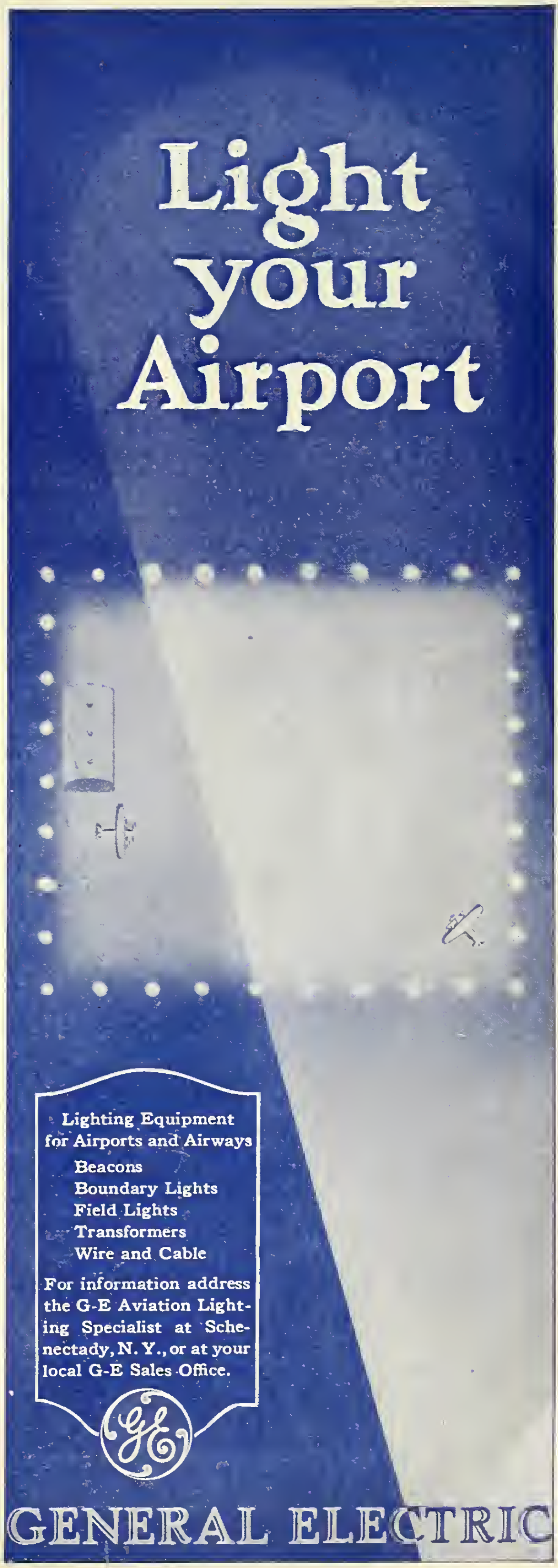
Fokker Aircraft
(Pacific Coast)

Alexander Aircraft
(So. Calif. & Arizona)

Operating:
West Coast Airways
Burdett Airport & School of Aviation
Pacific Aero Supply Co.
Western Ave. at 99th Street, Los Angeles.



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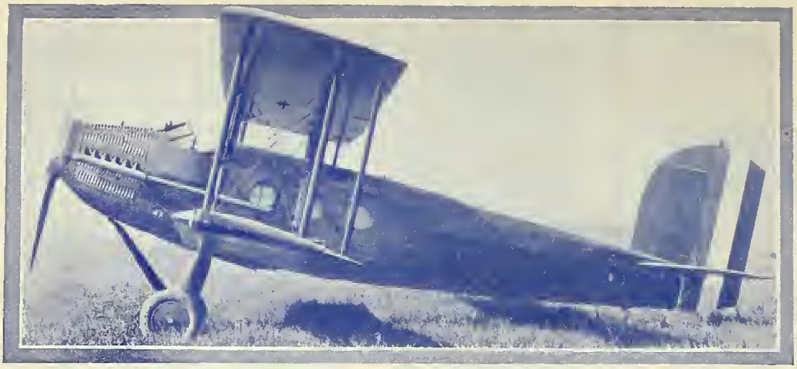

Douglas cargo plane used for transportation over U. S. Air Corps airways.

AIR TRANSPORTATION WITH 26 DOUGLAS CARGO PLANES

A GREAT deal has been written regarding commercial aviation in the United States since the Western Air Express has established such a marvelous record of 99.76 per cent during the past year in carrying the mail and passengers between Los Angeles and Salt Lake City.

While to the average person such an achievement seems unusual, this record has neither astonished nor seemed unusual to Major General Mason M. Patrick, Chief of the U. S. Air Corps. It has only served to justify his earlier predictions regarding commercial airlines in this country.

Too few realize that the United States Air Corps has for the past several years been operating its own airlines on a very large scale, and many of the present day commercial airlines have received advice and information from the Air Corps that has been of great benefit to them in formulating their operating plans.

At first the Army placed in service several rebuilt DeHavilland 2-seater airplanes. These were used between Dayton, Ohio, and Washington, D. C. General Patrick had many reasons for establishing this particular airway. Chief among them was the purpose of instructing Air Corps pilots in cross-country flying which up to that time had not been a very popular pastime. The reason it was not popular was because of lack of proper landing fields where oil and gas could be obtained, few towns were marked and also the airplanes then in use were not designed for work of that nature. His second reason was he realized that if the United States was to lead in commercial aviation the Air Corps would have to do the missionary or preliminary work.

The line was later extended from New York to Texas with many short lines feeding into the main line. As the lines expanded it was realized larger and more efficient airplanes were needed. General Patrick decided to purchase a quantity of 8-passenger airplanes for this work. These airplanes were to be so designed that either passengers or express could be carried when so desired.

Donald W. Douglas was asked to design an airplane in accordance with the required specifications, and when it was completed and flown on its test flight before the Air Corps officials it exceeded the specified high speed by 20 per cent and, instead of flying 100 miles per hour, it flew 120 miles per hour. This performance was so far above expectations that the Air Corps purchased nine of these airplanes at that time from the Douglas Company.

The nine Douglas large cargo airplanes, which were built two years ago, are still in daily service and since that time the Air Corps has each year ordered additional airplanes of this type from the Douglas Company. They now have a fleet of 26 in daily service throughout the United States, which is believed to be the largest fleet of heavy capacity airplanes in service in the world.

The Air Corps utilize these airplanes for many purposes in addition to carrying passengers and cargoes on cross-country trips, some of these purposes are as follows:

As an ambulance—They can be converted into an army ambulance airplane equipped with three hospital beds and two medical attendants.

As a photographic laboratory—One of these airplanes has been converted into a photographic laboratory wherein photographs are taken, developed and printed while the airplane is in flight.

As a service plane, similar to the emergency road cars sent out by the Automobile Clubs.

As a tourist plane—One of these airplanes was recently used "a la tourist." Several Air Corps personnel were on a flight of considerable duration and rather than make the trip from the landing fields into towns each night to enjoy a bed in a hotel, they removed the seats from the cabin and with the aid of their blankets made themselves comfortable on the floor of the cabin. This enabled them to fly later each day and also get an earlier start in the morning.

General Patrick's visions of several years ago are now realizations and organizers of commercial airlines will do well to study what the United States Air Corps has done and is doing with a fleet of Douglas large capacity airplanes.

LONG BEACH NOTES

BILL MONDAY of the Long Beach Municipal Field at Long Beach, having made arrangements with Tom Mitchell, owner of the T. M. mine, 50 miles east of Victorville, a short distance from the lower end of Death Valley, is making regular trips between Los Angeles and the mine in his Ryan M1 for the transportation of officials of the mining company and supplies between the two cities.

Earl Daugherty, also of Long Beach, has made two trips with Monday. While on one of the trips Earl scooped up a pan of dirt from under the wing of the plane which panned out over $1.50 in gold.

Earl Daugherty informs us that he has no intention of giving up flying, as he will keep two ships for his own use for business and pleasure flying. As he has worked hard at the game for the past seventeen years, he is going to give up the commercial end of it and devote most of his time to his real estate business, his first venture being the subdivision of his old flying field.

SUPER RHONE
Fixed Radial
Air-Cooled Aircraft Engine
120 HORSEPOWER at 1400 REVOLUTIONS
We offer the commercial aviation field this new engine at a popular price.
Low maintenance cost. Surpasses all others in ease of operation, installation, service and repair.
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In July, L. Morton Bach will demonstrate his tri-motor, eight place Air Yacht Deluxe

BACH AIRCRAFT COMPANY
Clover Field Santa Monica
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by the Department of Commerce

Alexander Aircraft Company

has received certificate of approval from the Department of Commerce Number AT7 on the combination wing job and Number AT8 on the long wing job.

Enthusiasts' faith in the safety of the Eaglerock construction is now verified.

Increased production enables the company at the present time to make delivery on three days notice.

Demonstration ships on all Eaglerock dealers fields. See your nearest dealer for details of the Alexander representative and sub-dealer plan. Money and opportunity for airminded men.

23 EAGLEROCK DEALERS

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Georgia—*Georgia Airways, Inc., Candler Field, Atlanta, Ga.*
Indiana—*Captain J. A. Yonge, Box* 1185, *Indianapolis, Ind.*
Wyoming and Montana—*Wyoming Airways, Casper, Wyoming.*
West Coast of Florida—*Wesley N. Raymond, Puntagorda, Fla.*
Southern Texas—*Marion P. Hair, P. O. Box* 420, *San Antonio, Texas.*
W. Virginia and E. Ohio—*Lyle E. Scott,* 328 - 2*nd St., Marietta, Ohio.*
La.—*Louisiana Airways,* 1712 *Pere Marquette Building, New Orleans, La.*
Utah, Nevada, So. Idaho—*Rocky Mountain Airways, Salt Lake City, Utah.*
Ill. and So. Wisc.—*Seivert Aircraft Corp.,* 5934 *So. Cicero, Chicago, Ill.*
Okla. and Tex. Panhandle—*Southwest Airplane Sales Corp., Britton, Okla.*
W. Washington and W. Oregon—*J. B. Story, Sand Point Field, Seattle, Wash.*
No. Carolina and Va.—*Charles Flying Service,* 3100 *Garland, Richmond, Va.*
So. Cal. and Ariz.—*Aero Corp., of Cal., Western Ave., at* 104*th St., Los Angeles.*
N. Y. and Conn.—*T. D. S. Aerial Service Inc.,* 35 *W.* 23*rd St., New York City.*
E. Mo., Ark. and So. Ill.—*Bridgeton Aircraft Corp.,* 223 *Pierce Bldg., St. Louis.*
W. Mo., E. Kan.—*Bennett Eaglerock Sales Co.,* 223 *W.* 12*th St., Kansas City, Mo.*
N. M. and Central Tex.—*Swastika Eaglerock Airways,* 312 *Columbia, Albuquerque.*
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— as determined by actual break-down tests:

Test No. 1

The most highly stressed interplane strut showed a factor of safety of 7.65.

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The most highly stressed cabane strut showed a factor of safety of 10.01.

Test No. 3

The most highly stressed flying wire pull showed a factor of safety of 7.21.

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The most highly stressed wing beam at cabane showed a factor of safety of 9.20.

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The most highly stressed rib with respect to air loads showed a factor of safety of 8.30.

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Complete Flying Course—15 Hrs.—$200

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The last 5 hours are devoted to cross country flying and map reading.

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NEWS OF THE AIR SERVICES

International Newsreel.

U. S. Aviation Unit, Observation Squadron, No. 1, stationed at Managua, Nicaragua.

Left to right: Lt. Scribner, Lt. Lemby, Major Rowell, in command of the squadron, Capt. Pierce, Capt. Mulcahy, Lt. Hunter, Lt. Henkle, Capt. Campbell, Gunner Wodarczyk and Lt. Cushman.

AIR CORPS MANEUVERS

By Roy A. Philblad

THE Annual Air Force Maneuvers, to be held this year at San Antonio, Texas, with the Second Division, will be preceded by a series of demonstrations at the special service schools at Fort Benning, Ga., Forts Riley and Leavenworth, Kansas, and Fort Sill, Okla. Planes and pilots from the First Pursuit Group at Selfridge Field, Mich., the Second Bombardment Group at Langley Field, Va., and the Third Attack Group at Fort Crockett, Texas, will participate in the maneuvers. Observation will be furnished by the 16th Observation Squadron at Fort Riley and the 12th Observation Squadron at Fort Sam Houston, Texas.

The demonstration at Fort Benning will be on May 3; at Fort Riley on May 5; Fort Leavenworth, May 7; and Fort Sill, May 9. Thereafter the units will proceed to San Antonio, Texas, to arrive on or about May 11.

The concentrated Air Force will consist of 100 airplanes, 92 officers and 145 enlisted men. Besides the 100 planes taking part in the war games, nearly 100 other ships will be dispatched to the grounds. Types of airplanes will be distributed as follows: 30 pursuit, 20 bombardment, 20 attack, 17 observation and 13 transports. The Staff, consisting of Brigadier General James Fechet, Assistant to Chief of Air Corps, who will be in command of the air units; Major H. C. Pratt, Chief of Staff, Major John H. Jouett, AAS-1, Major Joseph T. McNarney, AAS-2, Major Carl Spatz, AAS-3, and Captain Ralph H. Wooten, AAS-4, will proceed on May 1 witnessing the demonstrations enroute to the maneuvers.

Twelve airplanes from the Third Attack Group with 13 officers and 25 enlisted men will proceed eastward from Fort Crockett, via New Orleans, La., and Maxwell Field, Montgomery, Ala., to Fort Benning, where they will be met by 4 pursuit planes and their complement of officers from Selfridge Field, and a like number of bombardment planes and personnel from Langley Field. The demonstration at this station on May 3rd will be observed by representatives of the Infantry, Cavalry, Field Artillery and Coast Artillery, and is planned to exhibit the possibilities of attack aviation. Thirty 100-lb. bombs, and two hundred 25-lb. fragmentation bombs will be expended in this tactical maneuver. All transportation of personnel and spare parts will be effected by air, transport planes being used.

On May 5, light attack, light bombardment and pursuit planes will be concentrated from their respective groups at Fort Riley. At this station the program will include a ground inspection, aerial review, aerial combat by pursuit units, attack of a convoy and a battery by the attack planes, a smoke screen demonstration and a photographic demonstration, also attack and defense of an ammunition dump by bombardment and pursuit. For the smoke screen and photographic demonstration, four observation airplanes will be furnished by the 16th Observation Squadron. Machine guns and bombs, including sixty 100-lb. demolition, will be expended in carrying out this maneuver.

As at Fort Benning, the formations completing their missions will proceed at once to the next station, Fort Leavenworth, arriving there for a similar demonstration on May 7, which is to be repeated at Fort Sill on May 9.

On May 11 all the units which have taken part in these demonstrations will concentrate at San Antonio, with additional units from the First Pursuit Group at Selfridge Field and the 2nd Bombardment Group at Langley Field. The maneuvers will then taken place, ending on May 21.

According to a War Department press release, the 2nd Division, commanded by Major General William D. Conner, is made up of approximately 6,500 officers and enlisted men, constituting the only Regular Army division in the United States, all of which units being garrisoned at the same post.

There will be two phases of the maneuvers in Texas. The first phase will involve the participation of all the ground and air forces on the same side and is designed to develop staff functioning and the conduct of operations of large units of the pursuance of the regular plan of the commanding general. In the second phase a part of the air units will operate in the attack of the ground troops and positions, special attention to be given to the conduct of such attacks and countermeasures, taken by the ground and air forces.

Underwood & Underwood.

Marine aviators under command of Major F. T. Evans off for active duty in China.

Left to right: Lt. C. C. Jerome, Lt. W. J. Wallace, Major F. T. Evans, Lt. P. E. Conradt, Lt. F. B. White, and gunnery sergeant C. V. Frith.

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EASILY AND QUICKLY CONVERTED
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DOUGLAS COMPANY
SANTA MONICA
CALIFORNIA

Lt. King, Cong. Williams, Cong. Rainey, Cong. Chindblom, Lt. Wimsatt at France Field after a flight over the Panama Canal.

FRANCE FIELD NOTES

By Lieut. H. C. Downey

FRANCE FIELD acted as host recently to a party of congressmen who came down on the transport *St. Mihiel* and the liner *Cristobal*, arriving March 15th, and were greeted by a formation of pursuit from France Field.

The following day Lt. Pearcy ferried Congressman Perkins of New Jersey, who served so ably on the Lampert Air Service Investigating Committee, to the Pacific Side. Congressman Perkins, who does considerable flying, is an enthusiast on the subject and enjoyed his flight immensely.

On the 18th, Lt. McDonald ferried Congressman Craig to Balboa who was likewise delighted with the wonderful view of the Canal. The 19th, saw the return of Congressman Perkins with Lt. Pearcy as pilot.

Senator Barkley of Mississippi, Congressmen Perkins of New Jersey, Dennison of Illinois, Johnston of Illinois, Millikan of Mississippi, a Captain in the U. S. Army during the World War, Huston of New Jersey, Dickinson of Iowa, Collins of Missouri, and Eastlick of Tennessee visited France Field on the following day.

Congressman Carl R. Chindblom of Chicago flew over from Balboa with Lt. Wimsatt as pilot, while Congressmen Thomas S. Williams, and Henry T. Rainey, of the Military Affairs Committee, arrived in a bomber piloted by Lt. King. All were very pleased with their trip.

They were entertained at France Field by Col. Fisher, while Lts. Merrick, Douglass and Pearcy put three PW-9's through their paces.

Congressman Perkins made a short speech expressing his appreciation and assuring us of his continued support.

The Air Corps appreciate the fact that our legislators were willing and even eager to ride in the same planes that we use for everyday operations.

On the 24th of March, the Vice-President of the United States, General Charles G. Dawes, arrived aboard the steamship *Toloa*. Lt. Parker set out in a DH and, in spite of heavy showers, kept in radio communication with France Field, scouring the sea for some time until he picked up this steamer, whereupon he reported to France Field Operations Office. The mighty Operations Officer immediately worked his magic and dispatched two flights of PW-9's, two flights of NBS-1's, and three flights of DH's to greet the vice-president. General Dawes, it is reported, was very pleased with his reception and watched the maneuvers of the planes with great interest.

Secretary of War Dwight F. Davis was a distinguished visitor to France Field on March 30th. Lt. Harbeck and Sgt. Berg reported the approach of the *Ancon*, with the Secretary aboard, by radio to France Field Operations, whereupon an escort took off to greet the Secretary. Lt. McDonald in his photo ship took some pictures of the *Ancon* and the escorting planes. A delegation composed of Colonel Walker, Governor of the Canal Zone, General Martin, Commanding the Panama Canal Department, and Governor Arosamena of Colon met the Secretary at the dock. Shortly after landing,

Recently France Field has been coöperating with the Anti-Aircraft Defenses of the Panama Canal Department by supplying night flying airplanes in accordance with their instructions. A program usually calls for a bomber to fly over a certain given course, the searchlight batteries and the listening devices would be trained upon this bomber, the idea being that when the bomber was picked up the Pursuit would dive upon it simulating an attack, the Pursuit representing the Defense forces. It is very good training in night flying for France Field personnel and also good training for the Anti-Aircraft crews. However, the pilots report that they have no trouble eluding the searchlight batteries when they please, so that perhaps the scheme is of no great value.

ALABAMA GUARD NEWS

By Lieut. Wm. H. Beatty

ROBERTS FIELD, Birmingham, Alabama, home of the 106th Observation Squadron, Alabama National Guard, is already grooming itself for the 1927 encampment. Observers have begun refresher work, and will be prepared to radio their reports and sensings with accuracy and rapidity. Practice in releasing drop messages from substantial heights is also planned, realizing that under service conditions this would have to be done to avoid betraying the location of position.

Every Saturday afternoon and Sunday the whir of motors is incessant, whereas frequent flights are made during the week, interspersed with not infrequent cross-country flights.

The Douglas O2C, brought from Santa Monica by our instructor, Captain Duncan, has been given over 100 hours flight. Preparations for extensive mosaic mapping practice are under way, the completion of which will add many more hours to this ship.

The esprit de corps of the squadron could hardly be improved upon. The recent report of the War Department, showing that we have done more flying than any other National Guard squadron of the country, has filled the men with just pride. A long waiting list for members is on file, and the recruiting officer finds no difficulty in maintaining the personnel.

The squadron has done much to prove the efficiency of the army type parachute. A number of enlisted men and several officers have made jumps. At the last encampment no less than seventeen jumps were made without injury of any kind.

The field is situated two miles west from the heart of the city, and is adaptable for landing any type of plane. Cross-country flyers are invited to include our field in their itinerary. It is a convenient hop from Memphis, Nashville, Atlanta and the Gulf.

PROMOTIONS TO SECOND LIEUTENANTS, AIR CORPS

THE following-named candidates from the enlisted ranks and from civil life have been appointed second lieutenants in the Air Corps, as a result of the special examination held January 17-21, 1927. This examination was held to fill nineteen vacancies remaining from the fiscal year ended June 30, 1926:

Bodle, John Edward, Flying Cadet, 27th pursuit squadron, Selfridge Field, Mich., to Selfridge Field.

Bowen, Lewis Love, Captain, air reserve, air mail field, Omaha, Neb., to Marshall Field, Fort Riley.

Cabana, Alexander Everett, Flying Cadet, 8th attack squadron, Fort Crockett, Tex., to 3d attack group, Fort Crockett.

Cobb, Richard Eastman, Sergeant, Boston airport, Boston, Mass., to Boston airport.

Coppin, Charles Clifford, Jr., Sergeant, 88th observation squadron, Wright Field, Ohio, to Marshall Field, Fort Riley.

Doolittle, William Harold, Flying Cadet, 95th pursuit squadron, Selfridge Field, Mich., to Selfridge Field.

Dorr, Henry Weisbrod, 2d Lt., air reserve, Mitchel Field, N. Y., to Mitchel Field.

Ferris, Carlisle Iverson, Flying Cadet, 23d bombardment squadron, Luke Field, Hawaii, to Hawaii.

Fisher, Dale Davis, Flying Cadet, 2d bombardment group, Langley Field, Va., to Langley Field.

Hovey, Burton Murdock, jr., Flying Cadet, 57th service squadron, Selfridge Field, Mich., to 3d attack group, Fort Crockett.

Keillor, Russell, Flying Cadet, 17th pursuit squadron, Selfridge Field, Mich., to Selfridge Field.

Lawson, Ernest Harold, Flying Cadet, 94th pursuit squadron, Selfridge Field, Mich., to Selfridge Field.

Malone, A. J. Kerwin, Flying Cadet, 2d bombardment group, Langley Field, Va., to Langley Field.

Quesada, Elwood Richard, 2d Lt., air reserve, Washington, D. C., to Bolling Field.

Robbins, Earl Clinton, Flying Cadet, 60th service squadron, Fort Crockett, Tex., to 3d attack group, Fort Crockett.

Scott, Russell, Flying Cadet, 1st observation squadron, Mitchel Field, N. Y., to Mitchel Field.

Steensen, Mark Darrow Stephen, Flying Cadet, 90th attack squadron, Fort Crockett, Tex., to 3d attack group, Fort Crockett.

Wolfinbarger, Willard Roland, 2d Lt., air reserve, Kansas City, Mo., to Langley Field.

Woodring, Irvin Alberta, 2d Lt., air reserve, Selfridge Field, Mich., to Selfridge Field.

Starks, 2d Lt. Jeffery Raymond (Reserve), Washington, D. C., to Bolling Field, D. C.

Navy Vought Two-Place Observation Type
LIEUTENANT S. W. CALLAWAY IN THE PILOT SEAT

THE "CORSAIR"

Flight tests, including catapult trials of this new Navy Vought Observation-Fighter are completed. Its performances, both as a land plane and sea plane show a remarkable improvement over the present service type. The "Wasp" has played an important part in the outstanding success of this plane.

THE "WASP"
425 HP at 1900 RPM
WEIGHT 650 lbs.

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ARMY AND NAVY AIR SERVICE ORDERS

ARMY AIR CORPS ORDERS

THE following Army Air Corps orders have been issued as of the dates indicated in brackets:

Ballard, 1st Lt. Audrey B., Kelly Field, Texas, report in person on May 1, 1927, to the commandant Air Corps Advanced Flying School, Kelly Field, for duty as student in observation course, upon completion of course will resume duties at Kelly Field. (Mar. 29)

Ballard, 2d Lt. DeWitt, relieved from detail at Fort Sam Houston, Texas. (Mar. 31)

Barrett, 1st Lt. Carl H., leave of absence 4 months. (Apr. 14)

Bradley, Maj. Follett, Langley Field, Va., report to Commandant General Staff School, between August 20 to Sept. 3, 1927, for duty as student 1927-28 course. (Mar. 30)

Brereton, Maj. Lewis H., Langley Field, Va., report to commandant General Staff School, between August 20 to Sept. 3, 1927, for duty as student 1927-28 course. (Mar. 30)

Brown, Maj. Roy S., Kelly Field, Tex., to Langley Field, Va., and summer duty at Chanute Field, Ill. (Apr. 5)

Candee, Capt. Robert C., placed on the detached officers' list, to take effect upon arrival at Fort Leavenworth, Kansas. (Apr. 11)

Candee, Maj. Robert C., Langley Field, Va., report to commandant General Staff School, between August 20 to Sept. 3, 1927, for duty as student 1927-28 course. (Mar. 30)

Coleman, Maj. Fred H., Fort Leavenworth, Kansas, to Washington, D. C. (Mar. 29). Leave of absence 2 months. (Mar. 30)

Creasy, 2d Lt. William M., jr., relieved from further duty and training at the Air Corps Advanced Flying School, Kelly Field, Tex.; report to the commanding general Second Division, Fort Sam Houston, Tex., for duty. (Apr. 18)

Davis, Maj. Michael F., from duty as student, Command and General Staff School, Fort Leavenworth, Kansas, to Langley Field, Va. Leave of absence 2 months, 10 days. (Apr. 5)

Donnelly, Capt. Wm. F., designated as assistant commandant, Air Corps Technical School, Chanute Field, Ill. (Apr. 16)

Doolittle, 1st Lt. James H., Walter Reed General Hospital, Washington, D. C., to McCook Field, Ohio. (Apr. 9)

Enochs, Capt. Oliver P., McCook Field, Ohio, to commanding officer, McCook Field for duty. (Apr. 6)

Farthing, Capt. William E., Fort Sill, Okla., report to commandant General Staff School, between August 20 to Sept. 3, 1927, for duty as student 1927-28 course. (Mar. 30)

Finley, 1st Lt. Robert H., Kelly Field, Texas, report in person on May 1, 1927, to the commandant Air Corps Advanced Flying School, Kelly Field, for duty as student in observation course; upon completion of course will resume duties at Kelly Field. (Mar. 29)

Flood, 1st Lt. Wm. J., McCook Field, Ohio, to Langley Field, Va. (Apr. 6)

Foulk, 1st Lt. Albert C., foreign service, to McCook Field, Ohio. (Apr. 8)

Gilkeson, Maj. Adali H., leave of absence 2 months. (Apr. 18)

Goolrick, Maj. Robert E. M., Langley Field, Va., report to commandant General Staff School, between August 20 to Sept. 3. 1927, for duty as student 1927-28 course. (Mar. 30)

Hastey, Capt. Thomas W., Fort Sam Houston, Texas, to Washington, D. C. (Apr. 6)

Heffernan, Maj. Leo. G., Fort Leavenworth, Kansas, to Chanute Field, Ill. (Apr. 5)

Hill, Capt. Edmund W., Fort Monroe, Va., to Brooks Field, San Antonio, Tex. (Apr. 20)

Hunting, 2d Lt. Lloyd E., McCook Field, Ohio, to Kelly Field, Tex. (Apr. 6)

Hyndshaw, 1st Lt. Silas C., San Francisco, Cal., to Army retiring board, Ninth Corps Area, for examination. (Apr. 20)

Jaccard, 2d Lt. Paul A., transferred to Coast Artillery; proceed from Fort Sam Houston, Tex., to Fort Winfield Scott, Calif., for temporary duty and thence to Hawaiian Dept. (Apr. 8)

Jacobs, Capt. Lynwood B., Fort Benning, Ga., report to commandant General Staff School, between August 20 to Sept. 3, 1927, for duty as student 1927-28 course. (Mar. 30)

Jones, Maj. Byron Q., leave of absence 2 months, 10 days. (Apr. 5)

Keesling, Capt. Lloyd N., Denver, Colo., to March Field, Riverside, Calif. (Apr. 15)

Kennedy, Maj. Frank M., McCook Field, Ohio, to Washington, D. C. (Apr. 6)

Kenney, Capt. George C., from duty as student. Command and General Staff School, Fort Leavenworth, Kansas, to Langley Field, Va. (Apr. 5)

Kiel, 1st Lt. Emil C., Kelly Field, report in person on May 1, 1927, to commandant Air Corps Advanced Flying School, Kelly Field, for duty as student in observation course; upon completion of course will resume duties at Kelly Field. (Mar. 29)

Knerr, Maj. Hugh J., from duty as student, Command and General Staff School, Fort Leavenworth, Kansas, to Langley Field, Va. (Apr. 5)

Konig, 1st Lt. Ira R., Fairfield, Ohio, to Scott Field, Ill. (Apr. 8)

Landers, 1st. Lt. Sigmund F., Dayton, Ohio, to Brooks Field, Texas. (Mar. 25)

Lawrence, 1st Sergt. Richard, Mitchel Field, Long Island, N. Y., retired. (Apr. 9)

Lohman, Maj. Eugene A., Langley Field, Va., report to commandant General Staff School, between August 20 to Sept. 3, 1927, for duty as student 1927-28 course. (Mar. 30)

Lyle, Capt. Donald, Reserve, from Minneapolis, Minn., to Chicago, Ill., for training. (Apr. 14)

Lyon, Maj. Edwin B., Fort Leavenworth, Kansas, to Washington, D. C. (Apr. 5)

McGeehan, 2d Lt. Charles W., relieved from further duty and training at the Air Corps Advanced Flying School, Kelly Field, Tex.; report to the commanding general Second Division, Fort Sam Houston, Texas, for duty. (Apr. 18)

McPheter, Staff Sergt. Chester, from Kelly Field, Texas, to Fort Crockett, Texas. (Mar. 29)

Milling, Maj. Thomas DeW., Fort Leavenworth, Kansas, to Washington, D. C. (Apr. 5)

Peek, Maj. Norman W., Akron, Ohio, to Washington, D. C. (Apr. 6)

Rader, Maj. Ira A., Langley Field, Va., report to commandant General Staff School, between August 20 to Sept. 3, 1927, for duty as student 1927-28 course. (Mar. 30)

Renno, Staff Sergt. Cecil F., from Fort Crockett, Texas, to Kelly Field, Texas. (Mar. 29)

Reily, 1st Lt. Henry H., Kelly Field, Texas, report in person on May 1, 1927, to the commandant Air Corps Advanced Flying School, Kelly Field, for duty as student in observation course; upon completion of course will resume duties at Kelly Field. (Mar. 29)

Reynolds, Capt. Clearton H., leave of absence 1 month. (Apr. 5)

Richter, 1st Lt. John P., McCook Field, Ohio, to Fairfield, Ohio. (Apr. 6)

Ross, 2d Lt. Josiah, relieved from further duty and training at the Air Corps Advanced Flying School, Kelly Field, Texas, report to the commanding general Second Division, Fort Sam Houston, Texas, for duty. (Apr. 18)

Royce, Maj. Ralph, Langley Field, Va., report to commandant General Staff School, between August 20 to Sept. 3, 1927, for duty as student 1927-28 course. (Mar. 30)

Schnieder, 1st Lt. Max F., leave of absence 2 months. (Apr. 9)

Smith, Maj. Z. Montford, Reserve, from Washington, D. C., to active duty for training in connection with procurement duties. (Mar. 29)

Stromme, 1st. Lt. Joseph L., Fairfield, Ohio, to Washington, D. C. (Mar. 31)

Tipton, Maj. Wm. Duncan, to active duty, from Catonville, Md., to Washington, D. C. for training. (Mar. 26)

Walsh, Capt. Robert LeG., promoted to Major, Mar. 19, 1927. (Apr. 12)

Westover, Maj. Oscar, Langley Field, Va., report to commandant General Staff School, between August 20 to Sept. 3, 1927, for duty as student 1927-28 course. (Mar. 30)

Wheeler, Capt. William D., Chanute Field, Ill., to Kelly Field, Tex. (Apr. 5). To Philippine Dept. (Apr. 8)

White, 2d Lt. Will W., McCook Field, Ohio, to commanding officer, McCook Field, for duty. (Apr. 6)

Wilkins, 1st Lt. Paul C., Crissy Field, Calif., to San Francisco, Calif. (Apr. 6)

Woodbridge, 2d Lt. John P., relieved from further duty and training at the Air Corps Advanced Flying School, Kelly Field, Texas; report to commanding general Second Division, Fort Sam Houston, Texas, for duty. (Apr. 18)

Yeomans, 2d Lt. Prentice E., Fort Sam Houston, Texas, to Fort Clark, Texas. (Apr. 6)

NAVY AIR SERVICE ORDERS

THE following Navy air orders have been issued as of the dates indicated in brackets:

Alexander, Lt. (j.g.) Charles S., detached Torp. and Bomb. Plane Sqdn. 1, Aircraft Sqdns., Sctg. Flt., to Nav. Air Sta., Hampton Roads, Va. (Mar. 31)

Allen, Lt. Dolph C., detached Nav. Airc. Fact., Navy Yard, Phila., Pa., to VF Sqdn. 6, Aircraft Sqdns., Battle Flt. (Mar. 31)

Ault, Lt. (j.g.) William B., detached Naval Academy; to VO Sqdn. 3, Aircraft Sqdns., Sctg. Flt. (Mar. 28)

Berner, Lt. (j.g.) Warren K., detached VO Sqdn. 2, (*U. S. S. Nevada*), Aircraft Sqdns., Battle Flt. (Mar. 28)

Bolster, Lt. Calvin M. (C. C.), detached Nav. Airc. Fact., Navy Yard, Phila., Pa., to *U. S. S. Los Angeles*. (Mar. 19)

Bolton, Lt. Robert, jr., detached Naval Academy, to c.f.o *U. S. S. Saratoga*. (Apr. 18)

Boone, Lt. Walter F., detached VO Sqdn. 3, (*U. S. S. Raleigh*), Aircraft Sqdns., Sctg. Flt., to Naval Academy. (Mar. 28)

Botta, Lt. Rico, detached *U. S. S. Langley*, to Naval Aircraft, Buffalo, N. Y. (Mar. 25)

Boyden, 1st Lt., H. D., Marine Corps., on April 13 detached First Brigade, Haiti, to M. B., Quantico, Va., for duty Aircraft Squadrons, East Coast Expeditionary Force and for temporary duty beyond the seas in Nicaragua with VO Sqdn. 1. (Mar. 26)

Brix, Lt. Earl B., detached Nav. Air Sta., San Diego, Calif., to VO Sqdn. 2, Aircraft Sqdns., Battle Flt. (Mar. 31)

Carlson, Lt. (j.g.) David E., detached Nav. Air Sta., Pensacola, Fla., to sick leave. (Mar. 31)

Carlson, Lt. Harry F., detached Nav. Air Sta., Pensacola, Fla., to c.f.o. *U. S. S. Lexington*. (Mar. 31)

Carter, Lt. Paul W., detached Nav. Air Sta., Pensacola, Fla., to VO Sqdn. 1, Aircraft Sqdns., Battle Flt. (Mar. 31)

Compton, Lt. James P., detached Nav. Air Sta., Pensacola, Fla., to *U. S. S. V-3* (Mar. 19)

Cornwell, Lt. (j.g.) Delbert S., detached VF Sqdns., Aircraft Sqdns., Sctg. Flt., to Nav. Air Sta., Pensacola, Fla. (Mar. 31)

Costworth, Lt. Caleb J., jr., detached Nav. Air Sta., Pearl Harbor, T. H., to VO Sqdn. 1, Aircraft Sqdns., Battle Flt. (Mar. 31)

Crinckley, Lt. Andrew, detached VS Sqdn. 2, Aircraft Sqdns., Battle Flt., to Nav. Air Sta., Pensacola, Fla. (Mar. 25)

Cuddihy, Lt. George T., detached Nav. Air Sta., Anacostia, D. C., to VF Sqdn. 5, Sct. Flt. (Apr. 2)

Davis, Lt. Frank A., detached Nav. Air Sta., Nav. Oper. Base, Hampton Rds., Va., to VO Sqdn. 6, Aircraft Sqdns., Sctg. Flt. (Mar. 31)

Fraser, Lt. Comdr. Hugh C., detached Naval War College, Newport, R. I., to command VO Sqdn. 6, Aircraft Sqdns. (Mar. 25)

Fuller, Lt. Robert L., detached Nav. Air Sta., Pensacola, Flt., to VO Sqdn. 2, Aircraft Sqdns., Battle Flt. (Mar. 31)

Gowman, Lt. Joseph H., detached VF Sqdn. 6, Aircraft Sqdns., Battle Flt., to Nav. Air Sta., Pearl Harbor, T. H. (Apr. 2)

Gray, Lt. Thomas A., detached Nav. Air Sta., Coco Solo, C. Z., to c.f.o. *U. S. S. Saratoga*. (Mar. 28)

Greber, Lt. (j.g) detached VF Sqdn. 2, Aircraft Sqdns., Battle Flt., to Nav. Air Sta., San Diego, Calif. (Mar. 31)

Greer, Lt. Marshall R., detached Nav. Air Sta., Pensacola, Fla., to VO Sqdn. 3, Aircraft Sqdns., Sctg. Flt. (Apr. 2)

Haynes, Lt. Phil L., detached Nav. Air Sta., Pensacola. Fla., to VO Sqdn. 6, Aircraft Sqdns., Sctg. Flt. (Mar. 31)

Hylant, Lt. (j.g.) Emory P., detached Nav. Air Sta., Pensacola, Fla., to *U. S. S. California*. (Apr. 4)

Jeter, Lt. Thomas P., detached Army Air Corps Field, McCook Field, Dayton, Ohio, to VF Sqdn. 6, Aircraft Sqdns., Battle Flt. (Apr. 2)

Johnson, Lt. (j.g.) Francis B., detached VT Sqdn. 2, Aircraft Sqdns., Battle Flt., to Nav. Air Sta., Pearl Harbor, T. H. (Mar. 30)

Kimes, 2d Lt. I. L., Marine Corps, detached First Brigade, Haiti, to M. B., Quantico, Va., for duty with Aircraft Squadrons, East Coast Expeditionary Force. (Mar. 26)

Lee. Lt. Thoms B., detached VF Sqdn. 6, Aircraft Sqdns., Battle Flt., to Nav. Air Sta., Pearl Harbor, T. H. (Apr. 6)

Logan, Lt. Daniel N., detached Nav. Air Sta., San Diego, Calif., to V Sqdn. 1, Aircraft Sqdns., Battle Flt. (Mar. 28)

Lyon. Lt. John B., detached Army Air Corps Field, McCook Field, Dayton, Ohio, to VS Sqdn. 1, Aircraft Sqdns., Sctg. Flt. (Apr. 2)

McKay, Lt. James H., detached VO Sqdn. 3 (*U. S. S. Detroit*), Aircraft Sqdns., Sctg. Flt., to Nav. Air Sta., Nav. Oper. Base, Hampton Roads, Va. (Mar. 25)

Ragsdale, Lt. Van Hubert. detached Aircraft Sqdns., Battle Flt., to Bu. of Aeron. (Mar. 22)

Rittenhouse, Lt. David, detached VF Sqdn. 1, Aircraft Sqdns., Battle Flt., to Nav. Air Sta., Pensacola. Fla. (Mar. 31)

Schneider. Lt. Adolph P., detached Nav. Air Sta., Pearl Harbor, T. H., to VT Sqdns., Battle Flt. (Mar. 31)

Sease, Lt. Hugh St. C., detacbed Nav. Air Sta., to VS Sqdn. 1, Aircraft Sqdns., Sctg. Flt. (Mar. 25)

Short, Lt. Giles E., detached Nav. Air Sta., Coco Solo, C. A., to VS Sqdn. 1, Aircraft Sqdns., Sctg. Flt. (Mar. 31)

Simard, Lt. Cyril T., detached Nav. Air Sta., Oper. Base, Hampton Roads, Va., to VO Sqdn. 2, Aircraft Sqdns., Battle Flt. (Mar. 25)

Sinton, Lt. William, detached Nav. Air Sta., Pearl Harbor, T. H., to VT. Sqdn. 2, Aircraft Sqdns., Battle Flt. (Mar. 31)

Spangler, Lt. (j.g.) Selden B., orders Jan. 31, 1927, modified, to Nav. Air Sta., Nav. Oper. Base, Hampton Roads, Va. (Mar. 19)

Studley, Lt. Barrett, detached Nav. Air Sta., Pensacola, Fla., to VO Sqdn. 2, Aircraft Sqdns. Battle Flt. (Mar. 31)

Tague, Lt. James R., detached VO Sqdn. 3, (*U. S. S. Raleigh*), Aircraft Sqdns., Sctg. Flt., to Nav. Air Sta., Pensacola, Fla. (Mar. 22)

Taylor, Lt. (j.g.) Herbert W., detached Torp. & Bomb. Plane, Sqdn. 1, Aircraft Sqdn., Sctg. Flt., to Nav. Air Sta., Pensacola, Fla. (Mar. 22)

Tierney, Lt. Francis E. (M. C.), detached Battleship Divs., Battle Flt., to c.f.o. *U. S. S. Saratoga*. (Apr. 6)

Warner, Lt. Spencer H., detached VT Sqdn. 2, Aircraft Sqdns., Battle Flt., to Aircraft Sqdns., Battle Flt. (Mar. 30)

Welborn, Lt. Max, detached VO Sqdn. 6, (*U. S. S. Florida*). Aircraft Sqdns., Sctg. Flt., to Nav. Air Sta., Coco Solo, C. Z. (Mar. 31)

White, Lt. Comdr. Hugh L., detached Nav. Air Sta., Lakehurst, N. J., to Battleship Divs., Battle Flt. (Apr. 4)

Williamson, Lt. (j.g.) Thomas B., detached VO Sqdns., 5 (*U. S. S. Milwaukee*), Aircraft Sqdns., Sctg. Flt., to VF Sqdn. 5, Aircraft Sqdns., Sctg. Flt. (Apr. 2)

Wooster, Lt. Stanton H., detached Bu. of Aeron. to c.f.o. *U. S. S. Saratoga*. (Apr. 2)

Goggles as important as your landing gear

—and must be just as dependable

IN taking off or landing, goggles are just as important as the landing gear. Failure of either may mean disaster. At no time must a pilot be as sure of his vision.

The lenses of your goggles must be ground and carefully formed to prevent distortion. The lenses must be so shaped and the frame-work so designed that the goggles permit of unobstructed vision to the sides as well as ahead. The frame-work must be light and so cushioned that the extreme pressure of the wind will not press the goggle frame into the aviator's face or press on certain nerve centers that may cause him trouble. The cushioning part should be so constructed that wind will not seep up behind the goggle—there must be a close fit to the surface of the face. Also, there must be ventilation to prevent sweating on the inside of the lens.

Luxor Goggles fill the essential requirements. They are made in various grades. The most popular model, "Number 6" retails for $10.75, in a convenient aluminum case.

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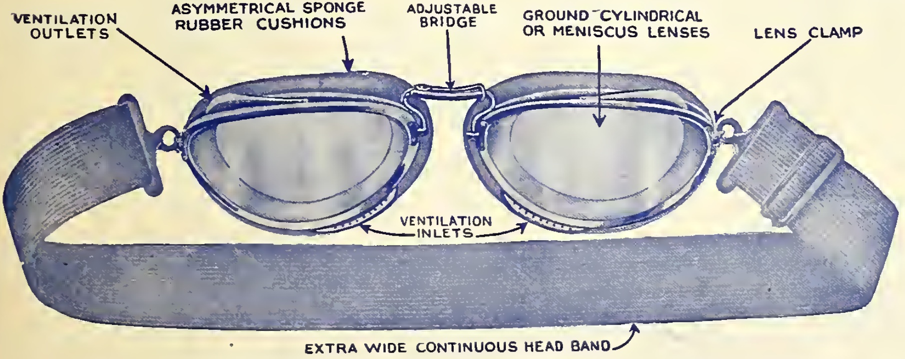
and all the other famous aviators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THE AERONAUTICAL INDUSTRY

BUFFALO AIR NEWS

By Notso

MARCH saw the inauguration of a new Ford Airline operating between Dearborn, Mich., and Buffalo Airport, Buffalo, N. Y. This line is now operating daily carrying inter-factory freight and express between the main plant at Dearborn and the Buffalo branch plant.

The first trip was made on March 28th and the first plane, a tri-motored job, was greeted by a large number of city and aeronautic officials. An average of thirteen hundred pounds of freight is being carried each way daily.

S. D. Welsh has been appointed local manager of the Ford Airlines with his headquarters in the new administration building of the airport. At the present time planes are not scheduled to stop overnight, arriving at 11:45 a. m. and taking off at 1:00 p. m. When weather or other delays require a plane staying overnight it is housed in the municipal hangars on the field. Whether or not the Ford company will erect their own hangar remains to be seen, no announcement of plans in this line having been made as yet.

Both single and tri-motored planes are being used on the route, pilots alternating between this route and the other lines being flown by the Ford company daily, namely Detroit-Cleveland and Detroit-Chicago. All the pilots are high in their praise of Buffalo's Airport.

Several students are busy putting in time at the Airport now-a-days. One of these is Roy E. DuVal of Rochester who has just purchased a new Waco 9 from Troy, Ohio. Lieut. Ronne, manager of the airport, flew it in for him with Roy as a passenger. Yours truly rode from Cleveland in with them.

Bob Lewis, genial Ford wholesale manager, has bought a Canuck in partnership with Otto Stanton. They have painted it green and cream and are craving a new name. Several of the boys at the Port are suggesting names but Bob can't see how he'll be allowed to tag it so pungently.

The Marine corps recently flew away four Curtiss Hawks for use at Quantico. Major Brainard headed the flight which was participated in by Capt. Bourne, Lieuts. Tex Rogers and Sanderson.

Charles Dallas has purchased a new Ryan M-1 which arrived by freight recently and has not been set up as yet.

W. R. Jones, Department of Commerce Inspector, spent some time at Buffalo Airport looking over planes and pilots during the month. Exams have kept our aspiring pilots on the hop.

The Buffalo Chamber of Commerce has organized an aviation committee, the first meeting of which was held on March 21st. Major John M. Satterfirled is chairman and C. E. Good, secretary of the committee. This is a step forward for Buffalo in aviation. The policy of the new aviation committee is so broad in scope that Buffalo bids fair to be second to none as an air center.

DR. AMES ELECTED CHAIRMAN OF N. A. C.

DR. JOSEPH S. AMES of Baltimore has been elected chairman of the National Advisory Committee for Aeronautics to succeed the late Dr. Charles D. Walcott who died on February 9 last. Along with Dr. Walcott, Dr. Ames was appointed by President Wilson in 1915 as one of the original twelve members of the committee and has served continuously and without compensation. He has been a member of its Executive Committee for twelve years and chairman of the Executive Committee since the year 1919.

DETROIT AIR NEWS

By Frank Bogart

ANNOUNCEMENT of two new monoplanes in preparation by Detroit manufacturers featured the month of April in the Detroit field. The Stinson Airplane Corporation will show its new model first at the aircraft exhibition at Washington May 2 to 6.

The Ford Motor Company's airplane division has been working since February on a single-engine monoplane, with cabin for four persons, including the pilot, and early this month it will be ready for test flights.

The Stinson machine is of course a cabin job like the biplane which the company put into production just a year ago this month, and 20 of which have been built and sold to air lines, business men, mining development syndicates and for newspaper exploration parties in the Arctic (Wilkins-Detroit News). The biplane will be continued as well as the monoplane.

The Ford Company last fall announced it would concentrate on triple-engine machines only and a production schedule which is said to call for one of the $40,000 all-metal transports every three weeks is said to be in effect at the Dearborn shops. No official announcement as to why a smaller single-engine machine is to be placed in production has been forthcoming, but it is generally understood that Henry Ford indicated he would like to see a few airplanes sold this summer and in the air with his trade-mark on them, and it didn't appear that the market for the higher priced planes was in a flourishing condition.

Incidentally, now that Ford freight planes are operating daily to Buffalo, the monthly mileage of the Ford lines is equivalent to the circumference of the earth, or 25,000 miles. Which is a contributing factor of

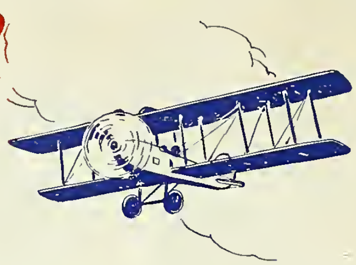
(*Continued on page* 452)

© Gertrude M. Taylor, Buffalo.

Group of prominent Buffalonians at arrival of first Ford plane at Buffalo inaugurating daily freight service.

(1) *E. M. Ronne, manager of Buffalo Airport;* (2) *Harry Russell, pilot of Ford plane;* (3) *Major John M. Satterfield, designer of Buffalo Airport;* (4) *James P. Moore, commissioner of parks and public buildings;* (5) *Mr. Walker, acting manager, Ford branch factory, Buffalo;* (6) *Nat. E. Duffy, superintendent of operations, Buffalo Airport;* (7) *Paul Dold;* (8) *Henry Seilheimer, state highway traffic chief.*

Color!



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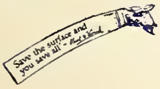
- Vesta Yellow
- Gelatea Orange
- Berry Pig Skin
- Cardigan Maroon
- Travel Air Blue
- Itala Green
- French Gray
- Fiat Wine
- Advance Blue
- Gun Metal Gray Deep
- Dorset Blue
- Renault Red
- Black
- Berry Havana Brown
- Moleskin Deep
- Roma Brown
- Limousine Blue
- Gendarme Blue
- Cornwall Blue
- Aqua Marine Blue
- Dresden Blue
- Brequet Blue
- Garavini Blue
- Cumberland Blue
- Hydro Blue
- Kensington Gray
- Berry Green Gray
- Berry Gray
- Berry Dust Gray



LEADERS in the production of commercial airplanes have been quick to recognize the importance of color as a sales factor.

Whereas color was given only passing consideration a year ago—it is now receiving the attention its sales value warrants.

Berry Brothers anticipated and prepared for this new development in airplane finishing.

Aircraft Berryloid—undisputed leader among lacquer finishes for aeronautical purposes—is now available in 40 standard colors!

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On the Wings *of* Progress

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Detroit, Mich. **Progressive Aircraft Finishes** Walkerville, Ont.

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DETROIT AIR NEWS

(*Continued from page* 450)

no little importance to the claim the United States may now make that the amount of commercial mileage flown this year will compare very favorably with that of Europe.

Patronage of the passenger air line operated by Stout Air Services, Inc., between Detroit and Grand Rapids, using Ford-built planes, continues to show gratifying increases. For the first half of April 124 passengers were carried, and the advance reservations for the week of April 18-23 totalled 42, nearly triple the usual number made in advance. Actually about 60 were carried during that week, giving rise to the hope that the April total would be 250, or close to, which will be a record for the nine months the line has been in operation. The fare is $16 each way, for 142 miles. A fair volume of light freight has been carried as well, and a mail contract is to be added this summer, but for the present and for some time to come Stanley E. Knauss, general manager, does not expect to be able to arrive at an analysis which will show conclusively whether actual operating costs in proportion to receipts will leave any tangible margin of profit. Not for two years, or until the line has been extended to connect with other passenger lines that will get into operation possibly this summer do Stout and his backers expect to be able to definitely prove that passenger air travel may be put on a paying basis.

R. W. Judson and W. R. Angell, president and vice president, respectively, of Continental Motors, Inc., which expects to offer a new aircraft engine to the trade this summer, have returned from their 8000-mile trip in the company's Fokker, having visited 12 cities of the Southwest and Pacific Coast on a business trip. They were gone 25 days, but bad weather laid them up a large share of this time, both on the Pacific Coast and en route home. They had no mechanical difficulty whatever. Lieutenant George R. Pond was their pilot.

A Stinson-Detroiter biplane, to be equipped with pontoons, has been bought by Edward F. Schlee, who with his brothers and partners in a local oil company, were the first purchasers of one of these machines. The second ship Schlee will operate on a taxi basis for parties wishing to reach northern Michigan resorts on Lakes Michigan, Superior and Huron. Trips requiring from one to two days by motor, train or boat, may be made in from three to five hours by plane. The future of seaplane travel for tourists and resorters in the Great Lakes area looms large.

In preparation for the expected rush of commercial pilots who will take examinations for federal licenses when the Department of Commerce inspectors reach Detroit this month, the facilities of the Henry Ford hospital have been made available for any pilot. Surgeons there have all the charts and data of the department and have been authorized by Secretary McCracken to make the examinations that have hitherto been restricted to members of the Ford air service.

Prominent air enthusiasts at dedication of Rodgers Airport, Honolulu.

Members of Hawaiian Legislature, in front. On speakers' stand, left to right: Mrs. W. R. Farrington, A. W. Van Valkenburg, Sec'y E. P. Warner, Gov. W. R. Farrington, Clarence H. Cooke, Maj. Gen. E. M. Lewis. Lt. Comdr. M. B. McComb, standing in center.

RODGERS AIRPORT DEDICATED IN HAWAII

THE dedication of John Rodgers airport near Honolulu, which took place on March 22, is a significant milestone in development of air transportation in Honolulu. Several hundred people attended the ceremony. Governor Farrington opened the occasion with a reference to aviation and its vital relation to present day civilization, and high praise for Captain John Rodgers as a pioneer in aviation and a friend of Hawaii.

Clarence H. Cooke, speaker of the house, was master of ceremonies. Commander M. B. McComb of Pearl Harbor told of John Rodgers' pioneering work in aviation and predicted that the airport will become an important stopping place, not only for Hawaiian planes but for ships enroute across the Pacific.

Edward P. Warner, Assistant Secretary of the Navy in charge of Aeronautics, said in his address that aviation depends on a system of such terminals and that Rodgers airport must be part of a territorial chain, each provided amply with facilities.

The memorial tablet, unveiled by Mrs. Wallace R. Farrington, was a gift of Mr. A. W. Van Valkenburg.

Mr. Van Valkenburg, who arranged the dedicatory program, then placed a lei about the Rodgers' tablet.

Among those attending were Secretary Raymond C. Brown, President Robert W. Shingle of the senate; Clarence H. Cooke, speaker of the house; Walter F. Dillingham, Maj. Gen. E. M. Lewis, Admiral John D. McDonald, delegate-elect Victor Houston, senators, representatives, leading business men of Honolulu, their wives and daughters, and army and navy officers.

RADIO MASTS ERECTED AT BOWMAN FIELD

TWO radio masts have been erected at Bowman Field, Louisville, Kentucky. These towers are 150 feet high and are located in the southwest corner of the field. While at no time should they interfere with a take-off or landing, yet they easily could cause trouble to a plane circling the field. The masts are now gray and difficult to see from the air.

HURON VALLEY AIR MEET AT YPSILANTI

THE Huron Valley air meet will be held at Ypsilanti, Michigan, June 10, 11 and 12, on the new airport located three miles southwest of Ypsilanti on State Road M-23.

Contests will include two entirely new types of cross-country races, a speed race, a dead stick precision landing contest and a pony express race.

The rules for the cross-country races eliminate formulas and handicaps which have always been a source of controversy. One takes into consideration speed only, and the other, distance.

The speed race is of the conventional type with the exception that it is run in two preliminary heats and one final heat, all planes starting from "at rest" position with engines running in groups not to exceed 5 planes each.

The pony express race was originated for use at the Battle Creek Air Race Meet held in 1925 and because of its novel features was used at the Ford Airport during the first Ford Reliability Tour and at Flint in 1926. All planes start from "at rest" position with motors running, in groups of not more than 4 planes. The pilots are required to land at the completion of each lap, shut off their motors, personally exchange a parcel with the judge, and resume flight. The race is 5 laps on a three-mile course. Winners are determined by elapsed time.

By means of an unusual division of the purses, every contestant is assured of at least sufficient prize money to pay his expenses. The prizes vary from $300 for first money to consolation prizes of $25 per man per race.

The officials for the meet are Luton S. Knowles, N. A. A. Contest Committee representative; H. A. Scott, referee; C. C. Bryant, chief judge; Glenn Todd, starter; Ralph Andrews will handle the "mike".

The contests are to be conducted under N. A. A. sanction and will be open to any pilot holding F. A. I. Certificate and N. A. A. sporting license who has a Federal license, any grade, or who has applied for a Federal license and has not as yet been examined. Examinations for F. A. I. Certificates and sporting license will be given at Ypsilanti Airport June 8, 9 and 10 for those who have not already qualified.

Two "HOFFMANN" Precision Roller Bearings on the shaft of the Wright "Whirlwind" Engine, carried the load of the Bellanca Plane in its record-breaking non-stop flight of 51 hours and 12 minutes.

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planes.

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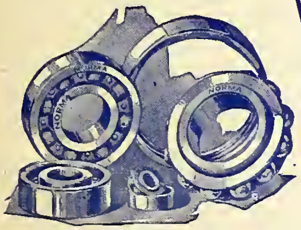

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BOSTON AIR NEWS

By G. W. Hamblin, Jr.

THE first regular night-flying passenger-carrying trip in America was made April 4 by the Colonial Air Transport, Inc., from Boston to New York. Six passengers were carried that night and a full passenger list has been carried every night since.

A complete reorganization of the Colonial Air Transport, Inc., was announced recently. This reorganization places the control of the company in the hands of eleven New Yorkers. Big things may be expected from Colonial during the coming summer, judging by the way they have copped the publicity here during the past few weeks.

The Harvard Flying Club has got its ship in the air, and the Travel Air is now flying daily. The story of the club is an interesting one:

On March 12, 1925, Rodney Jackson organized a group of students in Harvard under the title of "The Harvard Flying Club". At that time, twenty-five men were members of the club, and all but nine have been graduated up to the present time. Much amusement was derived by some individuals at that time because of the fact that the flying club had no means of flying. Last fall Billings came to the rescue, and offered the boys a Travel Air that had been used considerably, at a reduced price. Fred Ames loaned the money to purchase the plane. The ship was taken down, and housed in Gordon McKay laboratory, through the courtesy of Prof. Lionel S. Marks and the Engineering School. In February it was transferred to a garage, and Murray N. Fairbanks began to overhaul it. Crocker Snow gave the ship ten coats of Duco and W. N. Bump re-upholstered the cockpits. Frank Sproul did his part by grinding the valves. On March 9th Sproul and Mars towed the plane to the airport, and Eddie O'Toole rigged her. Billings flight-tested the ship, and pronounced it O. K.

W. Nelson Bump, '27, was elected president to succeed Rodney Jackson at the club election on March 12. Fred Ames, '27, was elected vice-president, Murray Fairbanks, '27, treasurer, and Crocker Snow of Harvard Law, secretary. With these officers, August O. Pabst, Robert W. Ayer and Frank R. Sproul comprise the directors of the club.

The ship is operated as a club plane. That is, it is club property, and flying instruction will be given to the members, with everybody enrolled sharing the expense of maintaining the plane.

Ten hours of solo time are necessary in order to be elected to the flight committee. The following members are now on the committee: Fred Ames, Crocker Snow, A. O. Pabst, W. M. Bump, Brutus Brookes, Frank R. Sproul, H. W. Nelson, Frank Otis, M. N. Fairbanks and O. A. Spaulding.

The rest of the club members are: J. A. Mars, Harry Hunnewell, William Byrd, R. S. Riley, M. A. Rieffle, G. M. Noble, D. K. Howard, C. R. Hayes, B. Bowers, J. A. De Metz, A. H. Donahey, J. B. Allen and Oliver Ames.

They have inaugurated a system whereby aspiring students may earn their appointment into the club. This new system of picking and choosing consists of having each applicant report at the airport once a week, service the ship, keep the flying log, and generally make himself useful. At the end of the probation, which generally consists of two weeks time, the club votes on the applicant. Three new members were voted in just before this new ruling went into effect. These are Driscomb, Hack and Parrish.

SUCCESSFUL AIR KING DEMONSTRATOR TRIP

S. F. TANNUS, president of the National Airways System of Lomax, Illinois, is greatly pleased with the reception accorded the Air King factory demonstrator ship which just returned from a cross-country flight throughout the mid-western landing fields.

This ship was flown by Glen Romkey, chief pilot for the National Airways System, who reported unusual interest as manifested by those who examined the plane.

NAT'L BALLOON RACE

FOURTEEN balloons composing the largest field of starters in a National Balloon Race in recent years are entered in the American Elimination Race from Akron, Ohio, May 29.

The United States Navy will again be represented in this national event after three years non-participation and the United States Air Corps is entering four balloons in addition to seven civilian entries from Detroit, Akron, and Los Angeles, California.

The field to be used is inside the oval of the Akron-Cleveland Speedway, five miles from the center of the city and will afford seating facilities for more than 25,000 people.

A program of heavier-than-air activities will precede the take-off of the racing bags, the Air Corps and the Bureau of Aeronautics coöperating with the Akron committee in making these events possible.

The Akron Race is under the auspices and direction of the Akron National Balloon Race Association composed of Akron business and professional men.

C. W. Seiberling is Race Association president; W. C. Young, aeronautic manager for Goodyear, is vice-president; H. W. Maxson, member of the 1926 James Gordon Bennett team, is secretary and race manager.

The P. W. Litchfield trophy will again be at stake in the coming race; the three teams traveling the greatest distance will be selected to represent the United States in the James Gordon Bennett International Balloon Race.

The army teams for the race are:

No. 1—First Lieutenant Paul Evert, pilot, and Second Lieutenant Reginald R. Gillespie, aide, both of Langley Field, Hampton, Va.

No. 2—First Lieutenant James F. Powell of Scott Field, Toledo, pilot, and Major Maurice R. Smith, Air Corps Reserve, of Kansas City, Mo., aide.

No. 3—Captain William E. Kepner of Scott Field, pilot, and Second Lieutenant William O. Eareckson, Scott Field, aide.

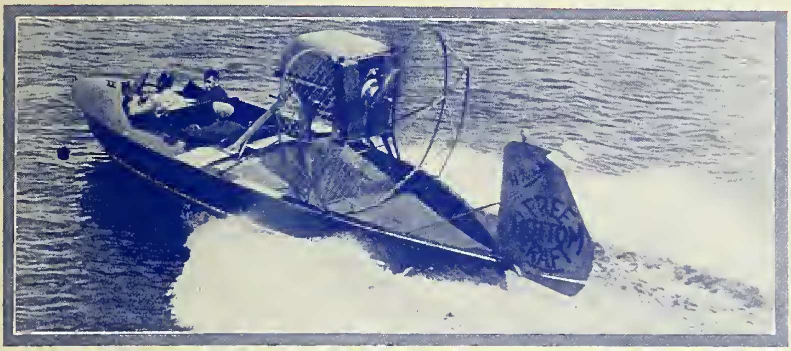
No. 4—First Lieutenant Frank M. McKee of Norton Field, Columbus, Ohio, pilot, and Captain Samuel T. Moore, Air Corps Reserve, of Springfield, Mass., aide.

P. & A. Photos.

R. W. Ayer, W. M. Bump, president, F. L. Ames, C. M. Snow, M. F. Fairbanks, C. A. Spaulding and A. Pabst—members of the Harvard Flying Club and their Travel Air plane.

Skims safely over the shallow places, too!

AIR PROPELLED—AIR STEERED—DRAWS ONLY 5 INCHES OF WATER—GOES ANYWHERE



Left
Like Flying
The kick of an HS-1 "on the step"

Right
Whistler "cutting the corners at 35 m.p.h."
—Grantland Rice's Sportlight Film.

HERE at last is a safe, practical air driven runabout that not only is dependably seaworthy but also takes you through shoal water and grasses—wherever there is five inches or more of water—at better than 30 miles per hour. Ideal for marshy bays, curving inlets, narrow rivers and uncharted lakes.

The *Whistler* is a thoroughly proven Runabout, built by makers of seaplanes for the U. S. Navy. "Nothing on the bottom but paint" is the reason why the *Whistler* can go anywhere. It is air-propelled and air-steered; powered with the old reliable OX-5 motor, fitted with auto type mufflers which practically silence engine noises. Runs and drives like a car. Its Vee bottom and generous beam gives stability and bank it in on the sharpest turns. Equipped with electric running lights and self-starter.

Orders for summer delivery must be placed at once. Let us tell you what owners think of the *Whistler*. Full particulars on request.

FREE BOTTOM CRAFT
NOTHING ON THE BOTTOM BUT PAINT

G. BIRKBECK POST,
Sole Distributor—475 Fifth Ave., New York
Agents Wanted

HASKELITE IN A GOOD PLANE

is as important as the engine

AIRCRAFT engineers and builders appreciate the importance of specifying HASKELITE, the waterproof plywood, for the 30 or more applications to which plywood is suitable. This is evidenced by the fact that over 90% of all plywood used in the industry is HASKELITE. Note the following list of prominent HASKELITE users.

Detailed description on request

Haskelite Manufacturing Corporation
133 West Washington Street
CHICAGO

PROMINENT HASKELITE USERS

Advance Aircraft Co.
Aerial Service Corp.
Airships, Inc.
Alexander Aircraft Co.
American Eagle Aircraft Co.
Anderson Aircraft Co.
Arrow Aircraft Co.
Atlantic Aircraft Corp.
Boeing Airplane Co.
Buhl-Verville Aircraft Co.
Chance Vought Corp.
Chicago Aviation Co.
Consolidated Aircraft Corp.
Curtiss Aeroplane & Motor Co.
Douglas Company
Eberhart Steel Products Co., Inc.
G. Elias & Brother, Inc.
Fairchild Aerial Camera Corp.
Goodyear Tire & Rubber Co.
Hamilton Aero Mfg. Co.
Johnson Airplane & Supply Co.
Keystone Aircraft Co.
Kinner Airplane & Motor Corp.
Kreider Reisner Aircraft Co., Inc.
E. M. Laird Airplane Co.
Lincoln Standard Aircraft Co.
Loening Aeronautical Engineering Corp.
Glenn L. Martin Co.
Mid-West Airways Corp.
Nicholas-Beazley Motor Co.
Pitcairn Aviation
Robertson Aircraft Corp.
Ryan Airlines
Sikorsky Mfg. Corp.
Stinson Airplane Corp.
Swallow Airplane Mfg. Co.
Travel Air, Inc.
U. S. Army
U. S. Navy
U. S. Postal Service
U. S. Post Office Department
Waterhouse & Royer
Woodson Engineering Co.
Yackey Aircraft Co.

NATIONAL AIR TOUR FOR FORD TROPHY

THE National Air Tour, the third of a series of reliability flights, scheduled to leave Ford Airport at Detroit, June 27th, is creating nation wide interest in commercial and aviation circles.

Although final determination as to the line of flight and cities to be visited has not yet been made, it is planned by the tour committee to make the flight of about two weeks duration covering some twenty cities. At each of the twenty stopping places, public demonstrations are planned with a view towards furthering public interest in air transportation and to enlist the support of commercial and civic interests in the establishment of adequate airports.

In addition to the attractive prizes and trophies for participants, an inviting program of entertainment and receptions will be arranged for each stop-over. Transportation facilities from landing fields to hotels, hotel accommodations, all necessary fuel, etc., will be supplied by the tour management and coöperating committees throughout the tour.

The tour is arranged to permit manufacturers and pilots to compete for the Edsel Ford Trophy, Stout Trophy and some $12,000 in cash prizes. Additional prizes of $200 to each entrant completing the tour will also be awarded. The Edsel Ford Trophy, donated to promote interest in the cause of commercial aviation, and which is held by the winner for a period of one year until won three consecutive times, will be awarded on points. Another trophy to be awarded for the fastest elapsed time made by planes of 81 cubic inch displacement or under, will be presented by the Stout Aircraft Corporation.

Sponsored by the Detroit Air Board, Detroit Aviation Society, Detroit Adcraft Club, Detroit Board of Commerce, and the Detroit Flying Club, the National Air Tour of 1927, has the official sanction of the N. A. A. and will be under the supervision of the United States Department of Commerce.

Any manufacturer or pilot interested in taking part or desiring further information is invited to write the tour manager, Ray Cooper, Detroit Board of Commerce, Board of Commerce Bldg., Detroit.

EMBRY RIDDLE CINCINNATI CAMPAIGN

CINCINNATI'S eyes are being opened scientifically to the possibilities and advantages of air transport and aerial service. The Embry Riddle Company is conducting an intensive advertising campaign throughout the city, using newspapers, street car cards, and bill boards.

A great deal of interest has been stirred up, and all indications are that the continued advertising is going to put over a great summer's business for Embry Riddle.

It is believed that this company is the first aerial service operator in the country to conduct an intensive campaign using newspapers, car cards and bill boards.

EAGLE AIRPORT AIR KING DISTRIBUTORS

DR. HERMAN J. NEUBAUER, the well-known physician, flyer and airplane enthusiast of northern Illinois, has just announced that he has taken over the distribution, sales and service of the Air King airplane made by the National Airways System of Lomax, Illinois.

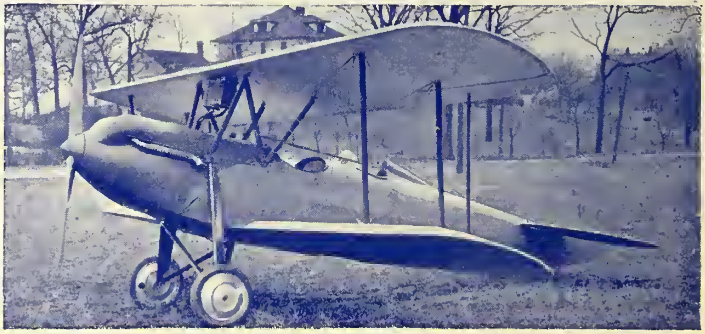
Dr. Neubauer is operating under the new name of the Eagle Airport Air King Sales Service at Hinckley, Ill., 50 miles west of Chicago. This organization was formerly known as the Eagle Airport School of Aviation.

Dr. Neubauer's territory for the Air King distribution covers all of Iowa, Wisconsin from Milwaukee (inclusive) south and Illinois from Peoria north, including Chicago. The organization has excellent opportunities for Air King dealers and agents.

In addition to the Air King Sales Service work, the company is also continuing and improving their modern school of ground and flying courses equipped with ideal student accommodations. Experienced pilots and instructors are in charge of all work.

ROBERT BOSCH MOVES

THE New York home of the Robert Bosch Magneto Company, Inc., will be removed on May 1st, from 123 West 64th Street, New York, to the new Robert Bosch Building at Queens Boulevard and Buckley Street, Long Island City.



Illustrating the Model 10

MODEL 10
$2385
MODEL 9
$2050
F. O. B. FACTORY

THE PLANE FOR PARTICULAR PEOPLE

WACO

THE WISE BIRDS' SELECTION

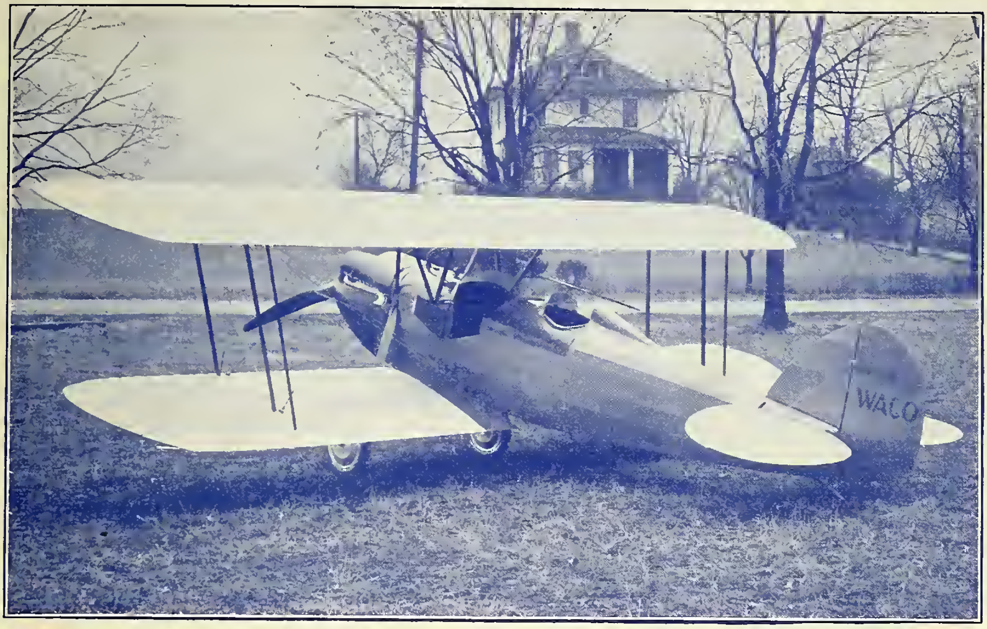
UNPARALLELED PERFORMANCE, GRACE OF LINES, EXCELLENCE OF WORKMANSHIP, ADVANCED ENGINEERING FEATURES, OUTSTANDING STURDINESS OF CONSTRUCTION AND SAFETY FACTORS FORM AN INCOMPARABLE COMBINATION FOUND EMBODIED IN A NAME OF FOUR LETTERS W - A - C - O.

NEW YORK DISTRIBUTOR
CHARLES PROHINSIE, Inc.

Field and Hangars:
Curtiss Field, Garden City, L. I.
FLYING INSTRUCTION

RESIDENCE
1005 St. Nicholas Ave.
Phone Billings 9276

IMMEDIATE DELIVERY ON NEW SHIPS. SERVICE AND PARTS



WACO

AIRPLANES

The New WACO Ten

QUICKER TAKE-OFF

FASTER CLIMB

HIGHER TOP SPEED

An airplane that meets the exacting requirements of present day commercial and pleasure use.

Ten years of building the utmost in airplane value is climaxed in the WACO Ten. With its many superior features such as split type hydraulic shock absorbing landing gear—adjustable stabilizers—four narrow ailerons, individually and differentially operated—roomy cockpits and structural strength in excess of requirements for Class 1 U. S. Air Commerce Regulations this WACO Model Ten is certain to again be considered the standard—as have all previous WACO models.

The WACO dealer organization will gladly show you the Model Ten or see it and ride in it at the All American Aircraft Display, Bolling Field, Washington, D. C., May 2, 3, 4, and 5.

A LETTER OR WIRE TODAY WILL BRING YOU THE NAME OF OUR NEAREST DEALER AND COMPLETE DETAILS OF THE WACO TEN.

THE ADVANCE AIRCRAFT CO.

TROY, OHIO U. S. A.

The new Monocoupe now being produced by the Central States Aero Co.

AIRCRAFT in COMMERCE

ALMOST daily reports are published concerning further adaption of aircraft to commerce. A cursory examination of national periodicals will furnish constructive proof that air transportation is to become an economic necessity. The industries that first grasp the advantages offered by the use of aircraft will find much unexpected profit accruing to them through their far-sightedness.

The Duplex Printing Press Company is the largest firm in the world manufacturing exclusively newspaper printing presses. They have made for themselves a reputation for conservative business methods, tempered with a readiness to utilize every available means to provide their users with the latest developments in equipment and service.

In order that their press users might be given the utmost in service, they employed, in 1924, Mr. E. A. Goff, to survey the situation and present a report outlining the possibilities of adding aircraft to their delivery facilities, for the purpose of speeding deliveries of repair parts.

Mr. Goff's experience in commercial aeronautics dates from 1916 when he first contracted for exhibitions of aircraft at County Fairs. He held the rank of Second Lieutenent in the Air Service during the World War. In 1925 Mr. Goff managed the Battle Creek, Michigan, Air Meet which was the first commercial air meet ever to support itself and show a profit. The following spring he managed a similar meet at Flint, Michigan, with equal, if not more satisfactory, results. The visiting pilots and contestents at both of these meets unanimously declared that the two were the most efficiently handled air shows that they had ever attended. An Air Meet to be held in Ypsilanti, Michigan, in the near future will also be under his direction.

The report made by Mr. Goff to the Duplex Company satisfied them that the use of aircraft could materially augment their fast delivery service of repair parts. Accordingly, a fleet of planes was purchased, a hangar erected at the local airport, a repair shop fitted out for maintenance purposes, and the Duplex Printing Press Company announced its readiness to deliver emergency repair parts to Duplex users by airplane within a radius of 500 miles. This radius is shortly to be extended pending the purchase of suitable equipment.

Since the service was originally announced for the delivery of repair parts, a number of additional uses have presented themselves for utilizing the equipment. Important mailing matter is speeded on its way by flying it to Detroit or Cleveland, or Chicago where it is put on the Air Mail. Important conference engagements are kept by the officials of the Duplex Company using the airplane for transportation when the railroad facilities prove too slow.

With the limited number of available airports and other facilities for air service, the total cost of operating the Duplex Air Service, including all charges, initial expenditure, depreciation of airplane and hangar in four years, repairs, salaries, gasoline, oil etc., has approximated twenty cents per flying mile for the machine regardless of load. Were it possible to answer the calls that are now refused because of the lack of adequate airport facilities, the cost could be reduced to about fifteen cents, which is a comparatively favorably rate.

Even the dormant imagination should be able to visualize other manufacturing and selling organizations using airplanes in the near future to equal advantage.

THE PERSHING GUARD AVIATION CORPS

THE Pershing Guard Aviation Corps, which was organized on March 3, 1927, with twenty student aviators, announces that it is prepared to furnish ground school training and actual flying instruction to 100 men. Applications are being received daily at the temporary headquarters, 1420 Vyse Avenue, New York City. Through a system of elimination the finest type of students are being chosen.

Lieutenant Edward de Olic, formerly of the Royal Flying Corps, is chief aeronautical instructor and in command of the first Squadron.

Ground school classes are now in force and are being conducted on Thursday evenings. The students also are receiving practical ground work at aviation fields over weekends. The subjects offered include aerial photography, bombing, machine gunnery, topography, map reading, instruction in flying, care of motors, and rigging and fitting. Men between the ages of 21 to 35 years of age with high school education or its equivalent are eligible for enrollment.

The Flying Corps is a branch of the Pershing Guard; which is a vast civilian military organization, having no connection with the government activities.

MILWAUKEE AIR NEWS

By Howard Steeley

The Northwest Airways, Inc., operators of the Chicago, Milwaukee, St. Paul and Minneapolis contract airmail route, has announced the establishment of air mail service between Milwaukee and Madison, Wis., the state capital, beginning April 1. This will be one of the shortest air mail routes in the country.

The Chicago Aeronautical Service has established a branch training school in Milwaukee, utilizing the Milwaukee county airport. Offices have been established here and two planes have been put into service. An initial class of twelve student pilots has been enrolled. Headquarters of the organization are in Chicago. Edgar LaParle is chief pilot of the branch here.

Just fifty-two minutes after he hopped off from Chicago, David H. Behnke, air mail pilot of the Northwest Airways, Inc., landed in Milwaukee, thus setting a new flying record between the two cities. Behnke flew a Stinson-Detroiter, five-place cabin ship, loaded with mail and express matter. The distance is a little better than 80 miles, airline. Two days previously Behnke piloted his plane from La Crosse, Wis., to Milwaukee, a distance of 175 miles, in seventy-two minutes, establishing a record between those points.

A course in aviation in the vocational schools of Milwaukee is proposed by the Milwaukee Light Plane Club, headed by Miss Lydia Kalishek, commercial pilot. The club, recently organized, has put a petition in circulation asking that various schools in the city adopt such a course, to provide a means of study of aviation for those unable to attend regular aviations schools here and in Chicago.

Miss Kalishek has just completed a tour of the world with her sister, Babe Kalishek, who has won fame in stunt flying in the movies and commercial exhibitions. The sisters were the prime movers in the organization of the club here.

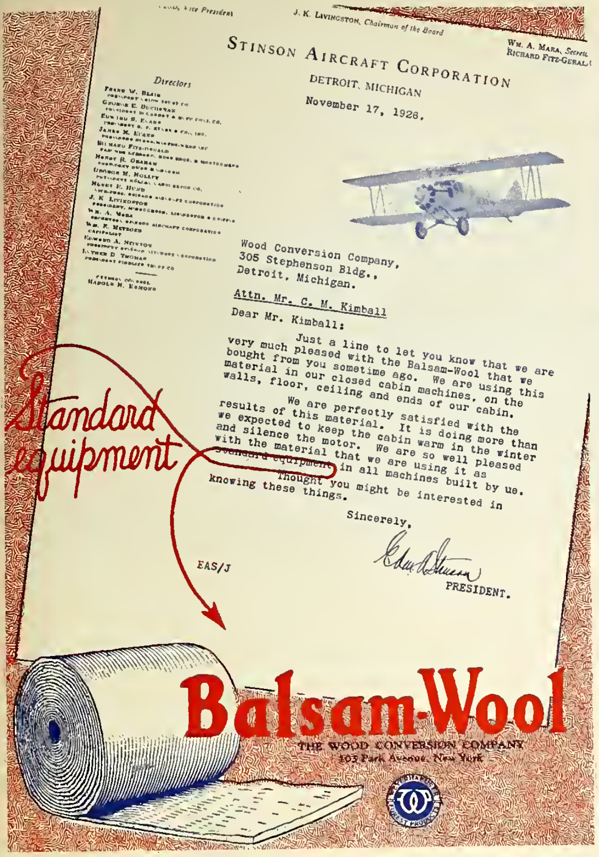
Plans also are under way by the club to erect a shop to build planes. Four members of the club already have under construction light planes they plan to launch this summer. There are thirty members now enrolled.

The Kalishek sisters will teach flying here during the summer. Four of their students are Arthur Paukner, Harold Janke, John Jaeske and Elmer Franke, all of whom are building their own planes.

"ASPA" NOTES

THE first step, in the creation of a National Gallery of Air Heroes was taken by The American Society for Promotion of Aviation at its last meeting, when a committee was appointed to carry on the work of collecting data and photographs of the men who have given their lives, in all branches of the United States Air Service.

It is planned to have various interests sponsor the presentation of memorials similar to the gold Radiotone plaque of Lt. Quentin Roosevelt, now hanging in the Roosevelt Library. Until a definite location can be obtained for the gallery, the memorials will be displayed in the mezzanine of the Roosevelt Hotel, New York City.



J. K. LIVINGSTON, *Chairman of the Board*

WM. A. MARA, *Secretary*
RICHARD FITZ-GERALD

STINSON AIRCRAFT CORPORATION
DETROIT, MICHIGAN

November 17, 1926.

Wood Conversion Company,
305 Stephenson Bldg.,
Detroit, Michigan.

Attn. Mr. C. M. Kimball

Dear Mr. Kimball:

Just a line to let you know that we are very much pleased with the Balsam-Wool that we bought from you sometime ago. We are using this material in our closed cabin machines, on the walls, floor, ceiling and ends of our cabin.

We are perfectly satisfied with the results of this material. It is doing more than we expected to keep the cabin warm in the winter and silence the motor. We are so well pleased with the material that we are using it as Standard equipment in all machines built by us.

Thought you might be interested in knowing these things.

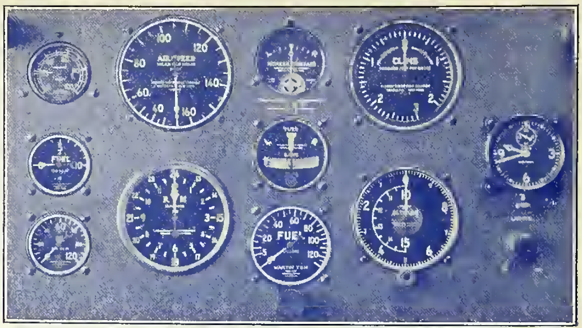
Sincerely,

PRESIDENT.

EAS/J

Balsam-Wool

THE WOOD CONVERSION COMPANY
103 Park Avenue, New York



PIONEER INSTRUMENTS

will be exhibited at the

ALL-AMERICA AIRCRAFT DISPLAY

WASHINGTON, D. C.

MAY 2-6, 1927

A bulletin covering this complete panel, and circulars describing and illustrating all standard instruments will be mailed on request.

PIONEER INSTRUMENT COMPANY
754 LEXINGTON AVE. BROOKLYN NEW YORK

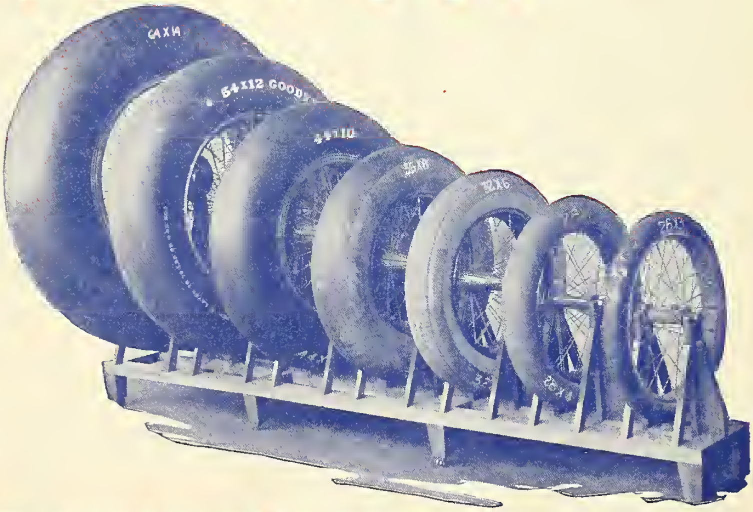
AIRPLANE WHEELS

FOR EVERY TYPE OF AIRPLANE—

All wheels built to U. S. Air Service Specifications—

SPECIAL WHEELS OUR SPECIALTY—

Material on hand for old DH4 wheels—



Dayton Wire Wheels
FOR AIRPLANES & AUTOMOBILES

THE DAYTON WIRE WHEEL CO., Dayton, Ohio.

AMENDMENTS to AIR REGULATIONS

First General Amendments to the Air Commerce Regulations

(Complete text of the Air Commerce Regulations were published in the January issue.)

THE first general amendments to the Air Commerce regulations took effect at midnight, March 22, 1927. They are as follows:

1. Citizenship: A non-citizen may now become a licensed pilot if he has filed his declaration or intention at the time he submits his application for a license, and accompanies it with a certified copy of such declaration; provided, however, that he diligently and successfully prosecutes the naturalization proceeding within the minimum time permitted by law. This means that a non-citizen may now file his declaration of intention, if he has not already done so, and thereafter submit his application for the class of license desired.

2. Pilots' Licenses: Licenses are now classified as follows:

(a) Transport.
(b) Limited Commercial.
(c) Industrial.
(d) Private.

The qualification for the Transport License has been increased from 100 to 200 hours minimum.

The Limited Commercial is new. The minimum requirement is 50 hours and the 50 hours *must* be *verified* in some manner suitable to the inspector, and the practical tests must be definitely and accurately accomplished. This license is designed to permit the pilot to carry passengers while doing only "airdrome" flying, thus permitting him to profitably build up the necessary time for a Transport License. When issued, it will limit the pilot, as far as passenger work is concerned, to a radius of 10 miles of a given airport or location from which he is a "fixed base" operator.

The physical qualifications for both the Transport and Limited Commercial are identical. There is an exception in the theoretical examinations in that the Limited Commercial is not required to answer the questions on meteorology and air navigation. The practical tests are the same. The "dead stick" landing has been increased from 200 to 300 feet and the "power" landing to 100 feet. In both cases a "three-point-touch" is required *in front of* a point or line designated by the inspector.

The Industrial License remains the same.

The Private License has been modified to the extent that the holders are now designated as Private Pilots or as Student Pilots, the latter being in the nature of a special license authorizing the student to undergo training in a licensed aircraft. It will be limited as to both time and area and no passengers or property for hire or reward may be carried at any time. To obtain such a license the student will be required to pass the same physical examination as is given in the case of Private Pilots.

Exemptions: No change has been made in the exemptions for Transport License. The exemptions in the case of Limited Commercial are identical with those of the Transport. The exemptions in the case of the Industrial and Private Pilots have been modified slightly.

3. Marking of Aircraft: There are but three classes of marks for *licensed* aircraft. They are—*S* meaning State, *C* meaning Commercial, and *X* meaning Experimental. The letter P has been eliminated.

The letter N is required on all aircraft engaged in foreign air commerce. Its use on other licensed aircraft is optional with the owner. Neither it nor any other letter is permitted on *unlicensed* aircraft. Therefore, an *unlicensed* aircraft will have as its identification mark merely a serial number, neither preceded nor followed by a letter of any kind. A licensed aircraft will be *preceded* by one of the following letters: C, S, or X. And it may also have the letter N.

Chapter I. Section 2—4 (B)

A pleasure or non-commercial aircraft need not be licensed, although engaged in flying between states. Such aircraft, however, MAY be licensed upon the request of the owner in which event it must observe all the requirements of licensed aircraft. Whether licensed or not, all aircraft must display the assigned identification mark.

Section 23.—Licensing and expediting the licensing of approved type airplanes: (A) For the purpose of expediting the licensing of airplanes constructed under approved type certificates and in the original possession of the manufacturer or dealer, the following provisions may be invoked, at the option of the manufacturer or dealer:

The manufacturer or dealer may present the manufacturer's affidavit showing that the aircraft is exactly similar to the specimen of the approved type and have the airplane flight tested. If the flight tests prescribed in Section 26A are passed and the Aircraft Inspector finds that the airplane is exactly similar to the specimen, a flight certificate will be issued for such airplane, good for ninety days after date and renewable for ninety day periods upon findings of the Secretary of Commerce that the airplane is in substantially the same condition as when the original certificate was issued. The manufacturer's affidavit and the flight certificate may be delivered to any purchaser and will be given such effect as is provided therefor in paragraph (B) of this section.

(B) An airplane constructed under an approved type certificate and in the possession of and owned by an eligible owner of aircraft of the United States, will be licensed as follows:

1. If the application is accompanied by the manufacturer's affidavit, the airplane will be inspected for similarity to the specimen and will be given the flight tests prescribed in Section 26 (A). If such inspections and tests are passed and the airplane is found to be equipped as required by these regulations, it will be licensed. (*Sec.* 23 (**B**).

2. If the application is accompanied by both the Manufacturer's Affidavit and a valid Flight Certificate, it will be licensed if found to be equipped as required by these regulations.

3. If the application is not accompanied by the Manufacturer's Affidavit and the Flight Certificate, it will be licensed under the provisions of Section 24 hereof.

Section 24—Licensing of airplanes not constructed under approved type certificates: (A) For an airplane constructed after July 1, 1927, and not manufactured under an approved type certificate, the application for the license must be accompanied by the information specified in Section 21 (B).

Chapter 2—Section 39—Identification marks for licensed aircraft: A licensed aircraft shall bear an identification mark consisting of the license number of the aircraft proceded by—

(A) The roman capital letter *S* (meaning State) for aircraft used solely for governmental purposes and belonging to States, Territories, possessions or municipalities, and

(B) The roman capital letter *C* for all other licensed aircraft. Aircraft not licensed, but for which applications have been filed with the Secretary of Commerce, will be assigned only a temporary number pending the issuance of license.

(C) The letter *N* must precede the identification mark on licensed aircraft engaged in foreign air commerce and at the option of the owner may precede it on other licensed aircraft. The identification mark will be assigned to licensed aircraft when the aircraft license is issued and a separate application therefor is *not* required.

Section 40—Identification marks for unlicensed aircraft: (A) Except as otherwise provided in this section, unlicensed aircraft must display, when in flight, an identification mark assigned by the Secretary of Commerce. The mark will be assigned upon the application of the aircraft owner and must be permanently affixed to the aircraft. It will consist of a number only and the letter *N* must not be made a part of it, nor shall any other letter, design, symbol or description be added to it. The mark may be used by any purchaser of such unlicensed aircraft upon his application therefor, if the application is filed with the Secretary of Commerce within twenty days of the delivery of the aircraft to the said purchaser and is accompanied by the bill of sale or a certified copy of it.

(B) A ferrying mark will be assigned to persons whom the Secretary of Commerce upon application, finds are manufacturers of or dealers in aircraft. The mark shall be used only on unlicensed aircraft held for sale by the manufacturer or dealer, except that a purchaser thereof may use the mark for a period of not more than twenty days after the aircraft is delivered to him. A manufacturer's ferrying mark shall not be used by a dealer after the aircraft has been delivered to the dealer. The ferrying mark must be temporarily affixed to the aircraft and shall be kept clean and legible. An aircraft displaying a ferrying mark shall not carry persons or property for hire or reward.

Section 42—Other symbols and marks: Except with the approval of the Secretary of Commerce, no design, mark, character, symbol, or description shall be placed upon aircraft if said design, etc., modifies, adds to or subtracts from or confuses the assigned mark or impairs or destroys its visibility.

Chapter 3—Section 50—Pilot's night flying qualifications: After the words "A transport" insert the following: "or limited commercial."

Section 51 — Carrying passengers at night: Licensed aircraft when engaged in carrying passengers for hire any time between one-half hour after sunset and one-half hour before sunrise must be equipped with electric landing lights, navigation lights and a Very's pistol or approved equivalent of a Very's pistol.

Chapter 4—Section 61—Classification of pilots and mechanics: Licensed pilots are classed as commercial or private pilots. Commercial pilots are licensed as Transport, Limited Commercial or Industrial Pilots. Private pilots are designated as private pilots, (without other qualifications) or as student pilots. Mechanics are licensed as Engine or Airplane Mechanics. A person may hold a plurality of licenses, such as both classes of mechanic's licenses or a pilot's and mechanic's license. A Transport Pilot will not be issued other classes of pilot's licenses.

Section 62—Privileges and restrictions of licensed pilots: Except as otherwise provided in these regulations, the privileges conferred and restrictions imposed upon licensed pilots are as follows:

(A) Transport pilot may pilot any type of licensed aircraft but not unlicensed aircraft carrying persons or property for hire or reward. Transport pilots shall have all of the privileges of navigating aircraft conferred upon other classes of pilots.

(B) Limited commercial pilots shall have all of the privileges conferred and be subject to all of the restrictions imposed upon Transport pilots, except they shall not pilot aircraft carrying persons for hire or reward outside of the areas mentioned in their licenses.

(C) Industrial pilots may pilot any type of licensed aircraft not carrying persons for hire or reward but shall not pilot an unlicensed aircraft carrying either persons or property for hire or reward.

(D) Private pilots, not designated as students, may pilot licensed airplanes not carrying persons or property for hire or reward. Private pilots designated as students are licensed only for the purpose of piloting licensed airplanes when receiving flying instructions and such student pilots shall not pilot licensed airplanes carrying persons or property for hire or reward or for any other purpose than receiving flying instructions nor within any other area than that specified in their licenses.

Section 63—Applications for pilots' and mechanics' licenses: An application for a pilot's or mechanic's license must be filed, under oath, with the Secretary of Commerce upon blanks furnished for that purpose. An applicant for a pilot's license, including a student's pilot license, must appear for a physical examination before a physician designated by the Secretary of Commerce and pass such examination, unless he is exempt under these regulations. An applicant for a mechanic's license is not required to take a physical examination.

Section 64—Character, age and citizenship qualifications: An applicant for a pilot's license must be of good moral character. The minimum age requirements are 16 years for private pilots and 18 years for industrial, limited commercial, and transport pilots. A private pilot may be a citizen of any country. An industrial, limited commercial, or transport pilot must be (1) a citizen of the United States, or (2) a citizen of a foreign country which grants reciprocal commercial pilot privileges to citizens of the United States on equal terms and conditions with citizens of such foreign country, or (3) an alien who has filed his declaration of intention to become a citizen of the United States prior to December 31, 1927, and transmits a certified copy thereof to the Secretary of Commerce. He must diligently and successfully prosecute the naturalization proceeding under penalty of the revocation of his pilot's license and from time to time must keep the Secretary of Commerce advised of the status of such proceedings.

Section 65—Flying experience requirements: (A) Changed from one hundred to *two* hundred hours of solo flying.

(B) *Limited Commercial Pilots:* The same solo flying required of Industrial Pilots.

(C) *Industrial Pilots:* Unchanged.

Section 66—Pilots' physical qualifications:

* * * * *

(C) *Limited Commercial Pilots:* The same physical qualifications prescribed for Transport Pilots.

(D) *Transport Pilots:* Unchanged.

(E) *Waivers:* Unchanged.

Section 67—Exemption from prescribed physical examination: An applicant for a pilot's license (or its renewal) will be exempt from the physical examination prescribed in these regulations upon filing with the Secretary of Commerce *a certified copy* of the *examination* for flying in the United States Army, Navy or Marine Corps made within six months of the date of filing his application for his pilot's license or its renewal, provided his physical qualifications as shown by such copy of the examination are not less than those required by these regulations for the class of license for which be applies.

Section 68—Pilots' examinations and tests:

* * * * *

(B) *Limited Commercial Pilots:* The same examinations and tests as are prescribed for Transport pilots, except the cross country flight and the examination on elementary meteorology and navigation.

(C) *Industrial Pilots:* Unchanged.

(D) *Private Pilots:*

3. A Private pilot, classed as a student, will be licensed without being required to pass the examination and tests prescribed in this subparagraph.

Section 69—Pilots' exemptions: Candidates for pilots' licenses, meeting the requirements of Section 65 and who make claim for and produce satisfactory proof of their right to the following exemptions will not be required to pass any of the examinations specified in Section 68, except the examination on the air traffic rules, and will be licensed as follows, if they possess the requisite physical qualifications:

(A) As transport or *limited commercial* pilots: (Preliminary part beginning with the word "Persons" and ending with the word 'are" deleted.)

1. 2 and 3—Unchanged.

(B) As industrial pilots:

1. Holders of pilots' ratings or certificates, in the reserve organizations of the United States Army, United States Navy or Marine Corps.

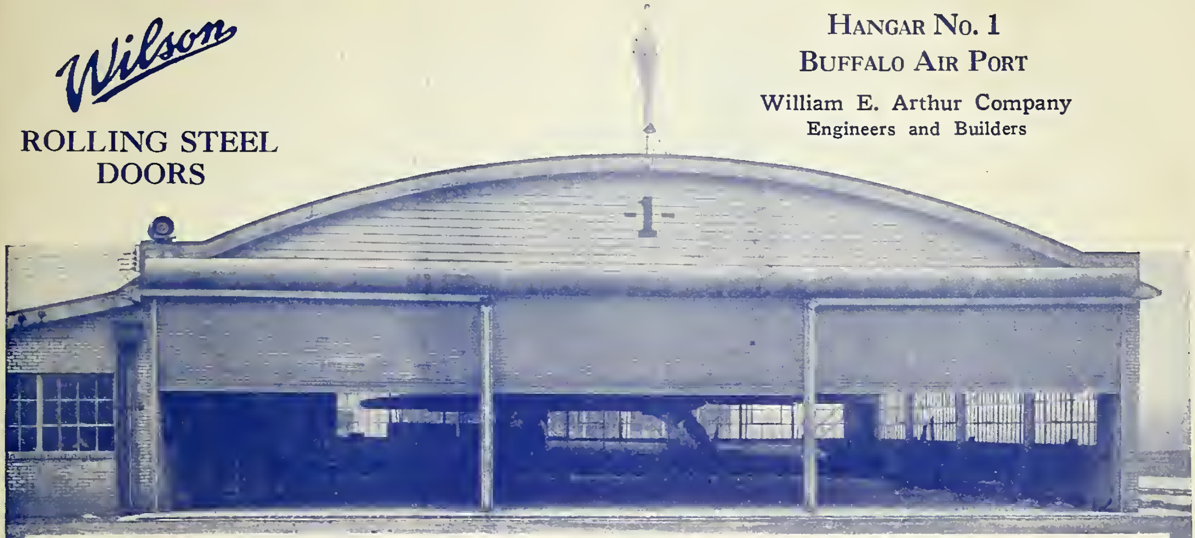
2. Holders of Federation Aeronautique Internationale Aviators' Certificates issued prior to May 20, 1926.

3. The persons mentioned in subparagraph (A), who have not had the solo flying required by Section 65.

(C) As private pilots:

1. Any of the classes of persons mentioned in subparagraphs (A) and (B) who have had (1) at least five hours of solo flying within the year immediately preceding the filing of their applications, or (2) at least 50 hours of solo flying since

(*Concluded on page* 462)



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ST. LOUIS AIR NOTES

Thomas W. Parry, Jr.

AFTER flying 120 hours and covering a distance of 12,000 miles during a period of four months of winter flying, three airmen, one of whom is a St. Louis flyer, have completed a War Department survey of the Missouri River. During the four months of work, gales of more than 100 miles an hour and temperatures as low as 42 degrees below zero were encountered.

Almost 900 miles were covered in the survey, extending from the mouth of the Missouri River, just below Alton, Ill., to its confluence with the Dakota at Yankton, S. D. The basis for the first accurate map ever made of the serpentine Missouri will be supplied by the survey. The photographs were taken from an altitude of 14,500 feet. The Fairchild Aerial Surveys of New York holds the contract for the work. Flying was done by Harlan Gurney of the Robertson Aircraft Corporation. The photographic work was done by A. O. Russell, a former Royal Air Force flyer, and Thomas F. Fortson.

Pilot Harlan Gurnee, St. Louis, Mo.

The contemplated air line to New Orleans may be routed through St. Louis instead of Louisville, according to William P. MacCracken, Assistant Secretary of Commerce in charge of aeronautics, who spoke before the Members' Conference of the St. Louis Chamber of Commerce recently. Whether or not St. Louis will be placed on the air line route depends largely, MacCracken said, upon the extent to which the city uses the air mail. He pointed out that business men should bear in mind that the air mail service has a direct bearing on national defense, offering itself as a formidable aid in any emergency with commercial aviation as a whole.

AIRAFT PATENTED

AIRSHIPS INCORPORATED of Hammondsport, N. Y., has recently been granted patents covering the Airaft which are so broad in their scope that they would appear to cover any type of inflatable boat. They have also registered the name "Airaft" and the manner in which they write it on the label.

In accordance with the guarantee on their label attached to the Airaft they use genuine Flightex fabric in this construction.

The Airaft is now in regular use by the Air Services of the Army, Navy and Coast Guard.

AMENDMENTS TO THE AIR REGULATIONS

(Concluded from page 460)

the granting of their ratings or certificates.

2. Persons qualified as commercial pilots of any class who prefer to be licensed only as private pilots.

The exemptions mentioned in this section shall cease midnight, December 31, 1927, and will not be applicable to persons whom the Secretary of Commerce find have unsatisfactory piloting records.

Section 71—Duration and renewal of pilots' licenses: (A) Unless sooner revoked, transport and limited commercial pilots' licenses shall remain in force for six months and industrial and private pilots' licenses one year from date of issuance.

(B) Insert after the words "except that a transport" the following—"or limited commercial pilot must."

(C) Unchanged.

(D) Upon application to and permission of the Secretary of Commerce, the area for permissible flying of aircraft carrying passengers for hire or reward, designated in the licenses of limited commercial pilots, will be changed to other areas. Upon application and for good cause shown, the licenses specified in this chapter may be extended for sixty days.

Chapter 6—Section 89—Savings clause: These regulations as amended shall take effect midnight, March 22, 1927. An aircraft required to be licensed under the Air Commerce Act of 1926 may operate under a letter of authority from the Secretary of Commerce pending the official examination of such aircraft, provided the application for aircraft license is on file with the Secretary of Commerce. Airmen required to be licensed under said act and who have filed their applications for licenses will be permitted to perform duties as licensed airmen of the class for which they apply, pending their official examination by the Secretary of Commerce.

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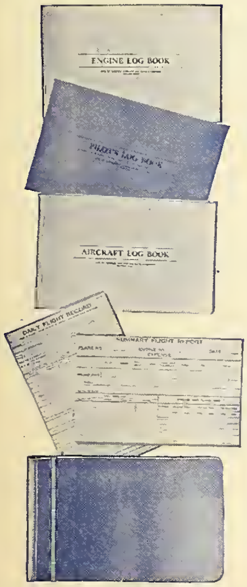

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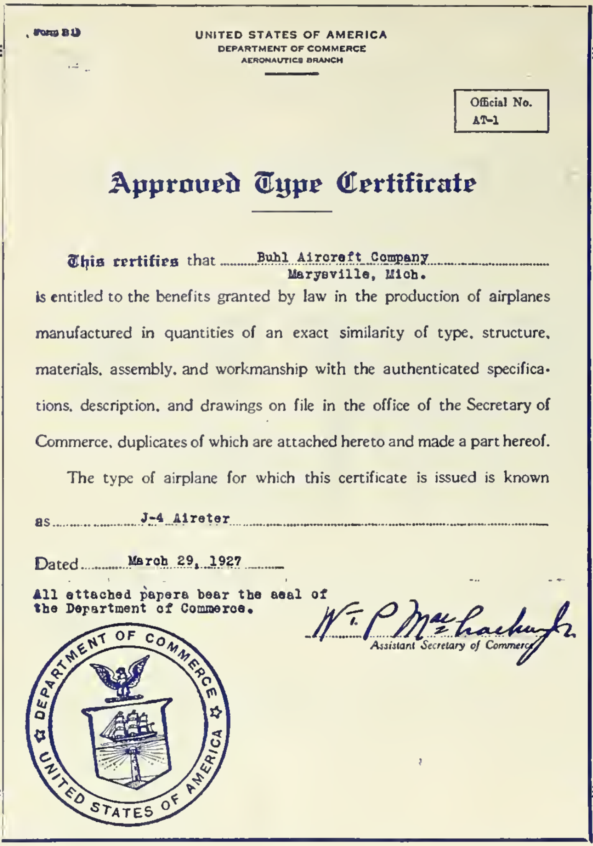

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This certifies that Buhl Aircraft Company
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is entitled to the benefits granted by law in the production of airplanes manufactured in quantities of an exact similarity of type, structure, materials, assembly, and workmanship with the authenticated specifications, description, and drawings on file in the office of the Secretary of Commerce, duplicates of which are attached hereto and made a part hereof.

The type of airplane for which this certificate is issued is known as J-4 Airster

Dated March 29, 1927

All attached papers bear the seal of the Department of Commerce.

Wm P MacCracken Jr
Assistant Secretary of Commerce

Official approved type number "1"

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NATIONAL AIR TOUR

By Frank Bogart

REPLIES have come from more than 100 cities to Ray Cooper, manager of this year's National Air Tour, the third annual renewal of the competition for the Edsel B. Ford reliability trophy, to his letter seeking to know whether the city possesses facilities for handling a fleet of 30 or more airplanes, and wishes a place on the tour itinerary.

Scarcely one of the cities replying has rejected the proposal, wholly, and the few that have been compelled to turn it down have said that it is because they have no airport large enough for such a great number of planes.

The inquiries were sent east, south, southwest, west, northwest, and through the Central West generally, embracing cities on three tentative itineraries. Nearly every city written to has so far responded. The replies will be analyzed as to the degree of financial support pledged before the final schedule is adopted.

June 27 has now been fixed as the date for the fleet to leave Detroit for the annual two weeks pilgrimage in demonstration of new types of airplanes and in illustration of the the ease and safety of air travel.

This means that the pathfinder tour for the completion of all arrangements on the circuit selected must commence about May 20.

William P. McCracken, assistant secretary of commerce in charge of aeronautics, was a recent Detroit visitor meeting the general executive committee for the tour, which this year as last is being run under the auspices of the Board of Commerce. The executive committee is a large one and besides the recognized leaders in and supporters of aviation, it includes representatives of all the large automobile companies. Frank W. Blair, president of the Union Trust Company, is chairman.

Mr. McCracken will take an active interest in the tour this year and may travel at least a part of the way with the fleet. At any rate he will send one of the planes of his department to assist in the pathfinding arrangements and to make the main trip as well.

The automotive representatives on the committee are Lawrence Fisher, Cadillac; John French, Briggs; Frederick J. Haynes, Dodge Brothers; Charles F. Kettering, General Motors; Henry Krohn, Paige; Alvan Macauley, Packard; William B. Mayo, Ford; Ledyard Mitchell, Chrysler, and Dubois Young, Hupp.

Bankers are Dwight Douglas, First National; T. W. P. Livingstone, Dime Bank; and Luther D. Thomas, Fidelity Trust Company.

Members of the aviation society: Charles B. Bohn, Alex Dow, H. H. Emmons, Carl B. Fritsche, George M. Holley, R. W. Judson, William A. Mara, William E. Metzger, William B. Stout, Ralph H. Upson, Sidney D. Waldon, A. V. Verville and L. M. Woolson.

General members: Henry Wald, Campbell-Ewald Company; N. B. Conger, United States weather forecaster; E. A. Batchelor and Karl S. Betts, chairman of the Aircraft Club aviation committee, which is assisting in several branches of the tour preparations, particularly outdoor advertising, publicity and educational campaign.

WICHITA AIR NEWS

WICHITA is developing fast into a center for the manufacture of commercial aircraft. Mr. Cessna, former president of the Travel Air Co., is locating here and plans on manufacturing a cabin monoplane.

Ira Beach, a commercial pilot and builder, has a five-place cabin biplane ready for tests. The test ship is powered with a 180 h.p. Hisso but is so designed that a Whirlwind can be readily installed. Mr. Beach has met the Air Commerce Board's requirements and should be successful in marketing a ship of this type.

Chas. L. Laird and associates have organized a company to build commercial aircraft. The first ship, a three-place OX5 model will be ready for the tests by May 1st. There are a number of new features employed in the design, a complete description of which will be available at a later date. Mr. Laird will be remembered as the designer of the Swallow Mail Plane as used so successfully by Mr. Varney on his contract route.

Both the Swallow and Travel Air plants are working day and night trying to keep in step with the demand for their products.

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NEW PEORIA AIRPORT

By FRANK A. MUIRHEAD

PEORIA'S new municipal flying field presents a billiard-table like surface for the airman, with few obstructions and these all concentrated at the east end of the field. The field of 80 acres is seven miles distant from Peoria at the angle 329 degrees, and is bounded on two sides by concrete paved roads. No obstructions higher than the four-foot fence exist on the north, west, and south sides. The high tension line, carrying power for the beacon and farmers nearby, is well marked on the east by red lights.

The field itself is well defined at night by lights set 200 feet apart. When planes are landing, two batteries of flood lights, mounted on trucks, are brought to convenient outlets (four) on the field in accordance with the demands of the wind or airmen. Each truck bears three 1,000-watt adjustable flood lights.

Alexander Varney, veteran Peoria pilot, is building a hangar which will be 60 by 100 feet on the ground, and 22 feet high.

The committee on aeronautics, Peoria Association of Commerce, intends to spend about $25,000 on the field. Carl Luthy, chairman, Elwood B. Cole, and Ralph M. Field, traffic manager, have been active in securing the field.

STIVERS AERO CLUB

THE first meeting of the Stivers Aero Club was held at Dayton, Ohio, January 26, 1927. At this meeting Andrew Keydoszius was elected temporary pilot, and Henry Schantz, temporary observer. The purposes of the club are to study aeronautics and to inculcate airmindedness into the student body of Stivers High School. Nineteen boys were present at the first meeting and all joined as charter members.

The officers of the club have unique designations. The president is known as the Pilot, the vice-president as the Relief Pilot, the secretary as the Observer, the treasurer as the Navigator, the sergeant-at-arms as the Gunner; the faculty advisor is designated as the Engineer. Committees are known as Flights and the committee chairman is called the Flight Commander.

At the present time there are over one hundred members in the club, or about one-seventh of the total number of boys attending Stivers High School. Seven meetings have been held at which the following have spoken:

Lt. J. T. Hutchinson, chief of Flying Section at McCook Field; Lt. L. M. Wolfe, in charge of the Radio Section at McCook Field; Lt. J. A. Macready, who formerly held the altitude, duration, and non-stop distance records, and last but not least Brigadier-General William E. Gillmore of the U. S. Army Air Corps.

The club has made a comprehensive visit to McCook Field, and the members have standing invitations from practically all of the sections at the field to visit them at any time in order to get a more detailed description of the work being done there. The Technical Data Section Library is open for the use of the members.

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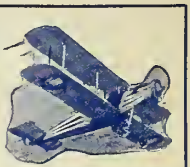

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THE Air Ministry announces that the British War and Victory Medals of a large number of ex-officers and ex-airmen of the Royal Air Force still remain to be issued despite the efforts made to distribute them by sending communications to the latest known addresses of all those concerned. It is particularly desired that those still in the possession of the department should be issued without further delay and the Ministry would therefore appeal to ex-service personnel entitled to them to apply at once and give the necessary information.

Applications should be addressed by ex-officers to the Secretary, Air Ministry, Adastral House, Kingsway, W. C. 2. and by ex-airmen to the Officer-in-Charge, R. A. F. Record Office, Ruislip, Uxbridge, Middlesex.

NEW BELDEN PLANT

THE Belden Manufacturing Company, with general offices at 2300 South Western Avenue, Chicago, Illinois, manufacturers of insulated copper wire, cable and cordage, have announced their intention to transfer part of their manufacturing activities to a new plant now under construction at Richmond, Indiana. The Richmond plant will be in operation by the end of this year.

Interior view of RB2 Transport plane as flown with Essex Coach, office equipment and eight men

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FOREIGN AERONAUTICAL NEWS IN BRIEF

Compiled from the foreign aeronautical press and the Transportation Division, Bureau of Foreign and Domestic Commerce.

ENGLAND

A TOTAL of 26,500 passengers arrived at and departed from the airport at Croydon during the year 1926. Machines of the Imperial Airways carried 16,600 of the passengers and French, Dutch, and Belgian craft carried large numbers. Machine arrivals and departures numbered 5,446.

ENGLAND expects to have three machines ready for the Schneider Trophy Race this year at Venice, Vice Consul Daniel Miller, London, reports to the Department of Commerce. One of the British machines is a monoplane being built by the Supermarine Aviation Works, Ltd., and is of the same type as that built by the same company for the 1924 race. The second is a biplane built by the Gloucestershire Aircraft Company and understood to embody many improvements over the Gloster III (1924 design) which was second in the 1925 race. The third machine is a new type of monoplane from designs by Lieut. Col. Bristow and staff.

The first two machines will be fitted with Napier Lion engines, specially built for racing purposes, and the third machine with a Bristol engine of the radial air-cooled type. Of the three pilots who have been specially selected for training with a view to flying the British machines, the best known is Flight Lieut. J. S. Chick. His colleagues are flying officers R. H. Stocken and O. E. Worsley.

Following the result of the flying tests of the machines of 1926 design, the Air Ministry will place orders for construction of improved types for the race, which will be held between Sept. 1 and 15.

AN international aircraft register is to be compiled by the British Corporation for the Survey and Registry of Shipping, marking an important step towards freeing commercial aviation from Government control and establishing an aircraft registry comparable to Lloyd's Register of Shipping.

FRANCE

CAPTAIN SAINT-ROMAN arrived at Casablanca, Morocco, on April 16, in his Farman-Goliath bimotored plane, completing the first leg of his flight to Buenos Aires. He plans to go by the way of the Cape Verde Islands, Pernambuco, Rio de Janeiro and Montevideo. Lt. Mauneyres and Mechanic Mathis are accompanying him.

AN international air competition, known as "Rallye Avions Paris-Vincennes", for touring planes will be held at Vincennes on June 5 and 6, under the auspices of the Society for the Development of Aviation. Total prizes of 100,000 francs are to be awarded. The contest is open to any entrant whose country is a member of the F. A. I. Competitors fix their own date and time of departure; must cover at least 186 miles and must arrive at the Vincennes Polygone on June 5. They will be classed according to points obtained.

ON March 29, Lieut. de Vaisseau Demougeot, of the French Navy, broke the world's seaplane height record by reaching a height of 31,164 ft. on a Loiré-Gourdou-Leseurre seaplane fitted with a Gnome-Rhone-Jupiter engine.

The previous record has been held since March 11, 1924, by M. Sadi Lecointe, who reached a height of 29,454 ft. on a Nieuport-Delage seaplane (300 h.p. Hispano-Suiza engine) at Meulan.

THE Levasseur plane of the regular French Navy type in which Capt. Charles Nungesser and Lt. François Coli will attempt to fly from LeBourget Airdrome, Paris, to Roosevelt Field, New York, has been delivered by the factory to the army airdrome at Villa Coublay. Trial flights have shown that it is capable of a speed of 207 kilometers (128.5 m.p.h.) with a load of 3,000 kilograms (6,600 lbs.). The plane is fitted with a 450 h.p. motor and will carry 800 gallons of gasoline.

Underwood & Underwood.

Lord Plumer, British High Commissioner of Jerusalem, (2nd from left) names new Imperial Airways airliner, "The City of Jerusalem", at Kalandich aerodrome, Jerusalem.

GERMANY

LUFT HANSA passenger planes will cover 35,000 miles daily when their summer schedule is opened. This is 50 per-cent higher than last year's mileage and six times that of four years ago. The Government subsidy of 2 marks per kilometer of flight still applies, and present indications are that the Luft Hansa will close the season with profit.

Fares on the London-Amsterdam service are to be reduced this summer from $19.46 to $14.60. This will be cheaper than first class rail and sea fare.

Following the success of their experimental night air services of last year, the Luft Hansa will inaugurate a number of trans-continental night services. An early morning service between London and Germany is included in the program. From May 1 a three-engined German plane will leave Croydon daily at 4 a. m. to fly to Amsterdam, Hanover, and Berlin, with connections to Scandinavia and Russia, and a machine with similar connections will arrive at Croydon from Germany at 8:30 a. m. daily.

THREE world's records have been broken recently in Dessau. On April 4, a G-24 Junkers land machine, equipped with 3 L-2 Junkers motors, piloted by Herr Horn, flew 14½ hours covering 1287.5 miles with 2211 lbs. of useful load. The world's record was previously 10 hours covering 875 miles, made by the Swiss airmen, Mittelholzer and Zinsmaier in a Merkur-Dornier, 6 B.M.W. 460 h.p. each, on June 29, 1926.

On April 1 a G-24 Junkers land type machine equipped with three L-2 Junkers motors, 230/265 h.p. each, carrying a useful load of 4,200 lbs. and piloted by Herr Valdemar Roeder flew for 8 hours covering 735 miles. The previous world record for a land machine with the same useful load was 4 hours in the air and 372 miles distance covered, made by the French flyers, Bajac and de Lamothe in a Lioré and Olivier biplane, 2 Jupiter 420 h.p., on September 16, 1926.

On March 29, Pilot Loose flew a J-33 Junkers seaplane equipped with L-5 motors for 14 hours, covering 1,060 miles with 1,102 lbs. useful load. The previous world record for seaplanes was 7 hrs. 35 min. 54 sec. over 620 miles, made by Lt. H. E. Halland, U. S. N., in a F-5-L flying boat, 2 Liberty 400 h.p., at San Diego, Calif., on June 6, 1923.

Flying a 20-horsepower Kemm-Daimler sport plane, Pilot von Langsdorff reached a height of 6,000 meters on March 20. This is believed to be the highest altitude reached with a motor of less than 100 horsepower.

GERMAN postal authorities announce that mailers can now forward postcards and letters to points in the United States, Mexico, Western Canada, and the Far East via the U. S. Air Mail Service, by paying a surcharge of 90 pfennig per post-card or per 20 grammes of letter mail.

(*Continued on page 470*)

WHEN Bert Acosta and Clarence Chamberlin established a new world's record of 51 hours, 11 minutes and 25 seconds of continuous flying they used Socony Aviation Gasoline in their Bellanca Monoplane.

For experienced aviators and motorists everywhere know that when sustained power, long mileage and dependability are required—Socony is the safest choice. It is Uniform in Quality—Always.

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(*Continued from page* 468)

SOUTH AMERICA

THREE companies are planning trans-South Atlantic air service to South America. Beginning next September an air mail service between Tolosa, France, and Buenos Aires, Argentine, will be established under contracts signed between the Argentine Director General of Mails and Telegraphs and the Companie de Transportes Aereos Latecoere. This company is reported to have a subsidy from the French Government of 36,650,000 francs for the first year's operations. They plan a combination water and air service flying from Tolosa to Casablanca, Morocco, to St. Louis del Senegal, to Cape Verde Island; from there to Fernando de Noronha Island by special fast steamers; from there to Pernambuco, Rio de Janeiro and Buenos Aires by plane. Weekly service each way (7½ days over 12,400 kilometers) is promised.

The German Aero-Lloyd Company have been granted 1,800,000 marks by the Reichstag to establish an airline to South America. The route in most favor now seems to be one including a route from Spain along the coast of northwest Africa to the Cape Verde Islands, Fernando de Noronha and Argentina. Germany already has established air routes to Spain over Geneva, Marseilles and Barcelona to Madrid.

A monthly dirigible service between Seville and Buenos Aires is planned by a Spanish-German company—Sociedad Colon Trasaerea Espanola. Dirigibles of a minimum capacity of 40 passengers and 10 tons of general cargo will be used. Under a decree by the Spanish Government this company shall have the exclusive right of aerial communication between Spain and Argentina for 40 years.

COLOMBIA

THE Colombian Council of Ministries recently approved a contract between the Ministry of Agriculture and the Municipality of Mariquita by which the city deeds approximately 100,000 square meters of land for the construction of a military airdrome. The National Government agrees to construct on this property barracks, hangars, etc., within three years.

CONTRACT for air service between Girardot and Neiva, Colombia, has been approved between the Scadta (Sociedad Colombo Alemana de Transportes Aereos) and the Government. The company is reported to have concluded a satisfactory arrangement with Great Britain facilitating the transmission of mail from that country destined for the Scadta's air service and providing for the sale of its stamps in British post offices.

URUGUAY

SUBSCRIPTIONS have started for obtaining another plane for Major Tadeo Larre-Borges, Uruguayan aviator, whose projected transatlantic flight from Italy to Uruguay ended recently with a wreck off the coast of Morocco. The new plane is to be called Uruguay II and is to be used in a renewal of the transatlantic attempt. Major Larre-Borges arrived home in Montevideo on April 8.

P & A Photo.

Lt. Demougeot of the French Navy, who recently broke the world's seaplane altitude record reaching 31,164 feet in a Loire-Gourdou-Leseure seaplane.

BRAZIL

A CONTRACT establishing aerial service between ports of Brazil has been signed between the Ministry of Transportation and the Condor Syndikat (German). The company agrees to establish a line from Rio de Janeiro to Rio Grande, stopping at Santos, Paranatua, Sao Francisco and Florianopolis; also one between Rio Grande and Porto Alegre, stopping at Pelotas; and between Rio Grande and Santa Victoria do Palmar, extending on to Montevideo, providing such plan is acceptable to the government of Uruguay.

STATISTICS of the Buenos Aires-Montevideo air service for the period, March 1 to December 31, 1926, are as follows: Regular trips made, 230; passengers carried, 663; mails carried, 3,277,500 kilos; baggage, 2,889,000 kilos; percentage of regularity, 97.5; percentage of security, 100; average kilometers per hour, 131.5.

ARGENTINA

EDOUARD OLIVERO, an Argentine airman, is planning to fly from Genoa to Buenos Aires, a distance of 7,900 miles, making only two stops to refuel, on a Savoia-Napier flying-boat, fitted with two British Napier engines, which is being constructed for him in Italy. His first "hop" will be from Genoa to Dakar (Senegal), a distance of 2,900 miles, thence from Dakar across the South Atlantic Ocean to Pernambuco, 2,200 miles, and then 2,800 miles to Buenos Aires. His only companion on the flight will be Bernardo Duggan. The expenses for this flight over three continents are being defrayed by subscriptions from the Argentine public.

STEADY activity in commercial flying from Cordoba, Argentina, where for two years the mails and passengers have been carried over the Cordoba-Villa Dolores and Cordoba-Rio Cuarto routes, is reported. The former service has been discontinued but the latter is in operation, and statistics for 1925 and 1926 show the following results: Planes in use, 5; total trips made, 3,403; total kilometers flown, 187,926; passengers, carried, 3,821; mails carried, 64,542.

MEXICO

A CONCESSION to establish freight and passenger air service between Mexico City, Pachuca, Tampico and Matamoros has been secured by a company headed by a Mr. J. Lezama from the Ministry of Communications and Public Works.

INSTALLATION of hydroplane service between Vera Cruz and Progreso, Mexico, with stops at Puerto Mexico, Frontera, Laguna and Campeche, was scheduled for March 20, 1927, by the Aero Lloyd, operating under the name of Compania Aero-Naviere del Golfo de Mexico. A Dornier plane has arrived in Vera Cruz from Germany for this service. It has a M.W. motor of 600 h.p., with an estimated speed of 124.27 m.p.h., accommodations for 8 passengers, in addition to that for pilot and mechanician, and space for one ton of freight. Its weight is 2½ tons. The plane will leave Vera Cruz shortly after the arrival of the night trains from Mexico City, reaching Progreso at 4:30 in the afternoon of the same day, the price to be the same as that charged by passenger steams, $60.

CANADA

CIVIL aviation in Canada registered a marked increase in 1926 as compared with previous years, according to a statement issued by the Dept. of National Defense. Statistics were taken from reports submitted by all aviation organizations in Canada, except the Royal Canadian Air Force and a few aircraft owned by individuals. 4,755 flights were made as against 3,171 in 1925. Flying hours increased from 4,091 in 1925 to 5,860 last year. In 1926, 6,436 passengers were carried over 631,715 miles, as compared with 4,897 passengers and 446,648 miles the year before. Freight traffic amounted to 724,721 pounds, as against 592,220 pounds in 1925. These figures include apparatus carried by the Provincial Air Service in Northern Ontario. Aerial survey companies photographed 20,921 square miles in 1926 and 3,167 in the previous year. Air patrols protected 105,000,000 acres in Northern Ontario. Timber type mapping by sketching was done over 22,295 square miles.

TENEMOS el gusto de anunciar que nosotros representamos los fabricantes mas principales en los Estados Unidos de aparatos y materiales de Aviación y Aeronáutica.

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AERO DIGEST will award a prize of $5 each month for the best humorous contribution published. Only those pertaining to the aircraft field will be considered. Address the "Picked From The Air" Department, Aero Digest, 220 West 42nd Street, New York, N. Y.

Eino W. Hintsala, New York Mills, Minnesota, won the prize for May.

Pilot: "Say, brother, can you fly?"
Bystander: "No."
Pilot: "Well, watch my airplane while I go to eat."

The aviation pilot aboard a battleship bawled at the new hand who was looking over the ship line watching the flying fish as they flew over the waves in the patch of the ship: "Hey you, haven't you ever seen flying fish before? Turn to." The new hand was taken aback but replied: "Yes, Sir, but only on the Air Station, never in their native element."

—*Harold E. Webb.*

* * *

Instructor: "Why do you always turn your head down inside the cockpit when making a turn."

Student: "You have always instructed me to keep my nose down in a turn."

Instructor: "Why didn't you make the turn when I gave you the signal at the last take off?"

Student: "I was watching the altimeter closely and as it didn't register a thing I didn't think we were off the ground.

First Farmer (after looking over a DH that had just landed in a cow patch): "I didn't think it could be done but they sure do it."

Second Farmer: "What's that."

First Farmer: "Keep that motor cool with that big paddle."

—*Sherman L. Willard*

* * *

Teacher: "Johnny how many kinds of sex are there?"

Johnny: "Three."

Teacher: "Name them."

Johnny: "Male, female and airmail."

—*Len Zinberg*

Sam lay in a hospital cot, swathed in bandages with the odor of an anesthetic still hovering over him, when the nurse ushered in a visitor.

"Sam," began the visitor, "Yo tol me yo all was a fust class pilot an cud duck dem clouds an sech."

"Big boy," answered the victim, "dat's jus wot ah did do. It happened lak dis. Ah's flying along when soon cums a big cloud an Ah ducks. Every thing's O. K., an den pretty soon a big mountain done cums along like hell. Ah ducks again. Wham! Yeh, big boy, dats jes wot Ah did do."

—*Clifford H. Pountney.*

* * *

Aero Photographer: "Jack go down to the hangar and take a picture of the PN-10 elevator."

New Assistant: "Elevator? I didn't know airplanes had elevators!"

—*Mrs. A. Tomlinson*

* * *

Milady's Spring Style Notes

- Aprons—will be larger and fuller at line.
- Hangars—will be wider and more sloping at the shoulders to permit the more effective draping of panels.
- Tarmac—will be the landing material.
- Stream lines—will prevail in all new models.
- Gussets and stays—will still be worn as interior bracing.
- Socks—will be extremely conservative as to color with the new shade of tickled pink predominant on Easter morn—and will be worn flapping.

Famous Sayings of Famous Aviators

- "The sky's the limit"—Macready and Schroeder
- "Don't give up the ship"—"Slim" Lindbergh
- "Keep your head down, Fritzie boy!"—The speed kings: Lts. Al. Williams, Harold Brow and Jimmie Doolittle
- "Long distance, please"—Lts. Macready, Kelly and Maughan
- "Stop, Look and Lose Altitude"—Casey Jones
- "No more worlds to conquer"—The World Flight personnel
- "Give us Liberties or give us Death"—The General Staff
- "All the world loves a duffer!"—Cy Caldwell

—*Kenneth D. Stern*

The aviator made a bad nose over with his ship in landing. He limped painfully to the nearest telephone booth and called up the nearest airport.

"Hello," he said, "I've turned turtle. Can you do anything for me?"

"I'm afraid not," came a sweet feminine reply. You've got the wrong number. What you want is the zoo."

Englishman (at plane crash in a Scottish village): "Give that aviator some air."

Suspicious Native: "Give him some yourself."

An airplane salesman was giving a prospective customer a demonstration ride. It was the first time the old man had ever been off the ground.

After a few minutes in the air the salesman decided to land. The field was a trifle small and the ship hit at a fast clip. It bounced over the earth and square into a big sturdy oak tree. Neither of the occupants or the machine was injured and the salesman to cover up his embarassment said, "Well, what do you think of her?"

The old gentleman scratched his head and said, "I'd like to know how you stop that thing when there ain't no trees around."

"Say, Sambo, I heard you landed a job last week, where did they hire you, at the box factory?"

"No, sah! I'se workin' at the aviation field."

"Aviation field! What do you do there?"

"You know de fellah who starts up ingines on airplanes and listens to see if dey are runnin' right?"

"Yes, he's a mechanic."

"Yessah, well ah helps him listen."

"Say, Rastus, was you in the world war?"

"Yes, sah, ah was in the aviation service, ah was."

"You was! Was you in any hard aerial battles?"

"Ah should say ah was. Ah was in a place where every plane fell like fleas off dogs and every aviator done shot many airplanes down a day."

"Well, well, you must have been in the LaFayette Escadrille then?"

"No, suh, ah was a porter in the barracks."

—*Eino W. Hintsala.*

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12 cyl. 400 h.p. Liberty, $1650. Moderately used splendid condition Liberty, $1175. Liberty needing overhaul, as is, $675. Moderately used completely overhauled 180 h.p. Hispano, $550 f.o.b. Atlantic Coast. New OXX6 100 h.p. Curtiss, $600, or Navy overhauled, $375; moderately used OXX6 Curtiss, excellent condition, $300. New OX5 in original box, $450. Slightly used OX5 converted to high compression, $375. Good used Curtiss OX5, $250. 2 cyl. 28 h.p. Lawrence, only $100. Slightly used 130 h.p. Clerget, $250. New 220 h.p. Hispano, $350. New 6 cyl. 45 h.p. Anzani with one damaged part which can be easily replaced, $190.

OX5 propellers, tractor type: C. A. L. Oak, untipped, original box, $12.50. Paragon variable pitch, $15. Flottorp club type original box, dandies, $25. Toothpick copper-tipped right from original box all perfect condition, $25. D-5000 Walnut metal-tipped, $35. Metal-tipped propellers for OXX6 Toothpick, $25; Hartzell Liberty club type and Starr Club type, $35. Pusher propeller metal-tipped for Curtiss OX5 and OXX6, $35. 28 h.p. Lawrence tractor propeller, $17.50. Pusher type, 4 bladed propeller for 400 h.p. Liberty, $75, or slightly used, $40.

150 h.p. Hispano nose type new perfect radiator, $90. Liberty 400 h.p. type, $55. Nose radiators for JN4D and Canuck new $30 or very slightly used and very slightly jammed on top due to handling but tested under pressure for leaks, $20.

Aluminum back, leather upholstered seats for JN4D and Canuck $8. Standard seat, $5; Standard seat cushion, $6. Safety belt for JN4D or Canuck, $3.50; for Standard $4.50. Safety belt used for F boat $3; for HS boat, $3.75. Rotary map case, rotate as trip progresses, $3.50; folding mahogany map or paper holder and writing desk, $2.75.

Spark plugs: AC for Curtiss, Hispano and others, 25c; for Liberty, 40c; Mica spark plugs for Curtiss, Hispano and others, 50c; for Liberty, 60c. Spark plugs for rotary motors, 75c, for Fiat, $1; BG spark plug, $2.50; Mosler spark plug, $2. Spark plug wires with terminal on end, 20c; terminal for spark plug wires, 10c. Fire extinguisher, charged, with bracket, $10. Navigation lights—one red, one white and one green, per set, $7.50. Metal wing skids for Canuck or JN4D, $1.50 each. 5 gal. yellow pigmented dope, $13.50. Aerial camera, Thornton-Pickard type "L" with 36 plate holders, takes pictures 4 x 5", 8" fixed focus, new complete in original dandy carrying case, $100. Hoisting hooks for F or MF boat, $10.

Dandy new herring-bone flying suits with hookless fasteners, $9.50; white flying suits, button fastened, $8.50; new type chamois lined leather helmet, $5.50; corduroy lined leather helmet, $3.75; all chamois helmet (fold carry in pocket), $4.50; gaberdine helmet, $2.50. Italian gogglette, $3.75; Cesco curved wide-vision, $1.75; French gogglette, $3.50; non-shatterable goggles; NAK resistal wide vision, $4.50; Jumbo resistal oval, $3.25; Triplex wide-vision, $4.00; Triplex oval, $2.50. Cotton and linen covers all made of gov't spec. material for Canuck, JN4D and Standard; gov't spec. cotton scalloped tape, 5½c yd., or 110 yd. rolls, 5c yd.; gov't spec. frayed cotton tape, 5c yd., or 100 yd. rolls, 4½c yd.; ordinary cotton scalloped tape, 4c yd., or 131½ yd. rolls, 3½c yd. Gov't spec. cotton cloth, 60c yd.; 50 yd. or more 55c; 100 yd. or more, 50c. 5 gal. fresh nitrate dope, $9; 25 gal. or more, $1.50 gal.; 50 gal. bbl., $67.50. 10" double pointed needles, 35c; curved needles, 35c; linen thread, 35c per spool. No. 7 rib cord 1c yd., or $3.00 lb.

JN4D aileron control cable assembly (overhead), $5.50 for the two wires; from stick to aileron control cable assembly, $3 per wire; JN4D rudder control assembly, per side, $2.80; elevator control assembly upper or lower, $1.50; front to rear rudder bar cable, 50c; JN4D landing gear struts all shaped to form—front, $2.00 each, rear, $2.50 each or $8 per set of 4. 26 x 4 new tire, $7.50, or slightly used, $5, or moderately used $3.50; new tube, $2.25; DH wheel, $8.50; DH casing new, $10, or unused passable, $7.50; surplus tube, $1.75, or newly manufactured, $3.50. Adapters for converting DH wheels for use with Jenny or Standard $7.50.

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A NOD AND A WINK

(Continued from page 381)

Ah, me!—Where was I?—Oh yes, about that French pilot—well, his heart was apparently in good shape, but his head had quit working for the day. Anyhow, best of luck to him—may he go back and stunt some more. And may she make him completely happy by eventually marrying someone else.

YOU may have noticed that colleges everywhere are placing a ban on students owning automobiles. The reason for the ban is that students are becoming paralyzed in the right arm, through holding the other occupant of the car in her seat. This unfits them for the milder forms of college athletics.

But you can't beat those students; take away one thing and they'll get another. I see where the Harvard students have got up a Flying Club and purchased a Travel Air, thus showing excellent judgment, according to a gent named Walter Beech. Well, those Harvard boys had to go in for some sort of sport, after football proved too rough for them. You know, after one of those Princeton games they had to put the whole Harvard team in hospital and give it time to grow together again. Up in an airplane they think that Princeton won't be able to get at them.

One of the members of this flying club is named Willy Bump. The answer is probably in the affirmative.

UP there in dear old Boston, the home of the Watch and Ward Society and kindred uplift organizations, they've just fined a young aviator for flying without a license and for operating an unregistered plane—in fact, a condemned plane.

Boston pulls so much funny antique stuff, like barring modern literature and covering up nude art, that's it's cheering to see the old bean-pot doing something sensible for a change. I'm right with the judge who fined Henry Larkin $100 for breaking the air laws—though Henry said he was only larkin'.

DID you see where those Nicaraguans fired on one of our Marine Corps DH's? Apparently those fellows have no respect for the aged and infirm.

"COMMERCIAL FLYING HAMPERED IN EUROPE" reads a headline. That's where we have the advantage of Europe. Nobody pays any attention to our commercial flying, either to hamper it or help it.

SEE where the Italian Cabinet Council decided to found a special Aerial Police Corps to direct our traffic. We don't need police to direct our air traffic over here—what we need are microscopes so we can see the traffic.

ALL American pilots will sympathize with Commander de Pinedo in the loss of his plane by fire, and they will be glad to assure Signor Mussolini that the fire was not the result of an anti-Fascist plot. It was a natural result of the activities of that phenomenon known as the great American moron; he is a member in good standing of the tribe of nit-wits who smoke around airplanes when they are being filled with gas, who throws his lighted match beside the plane, who climbs up on it and breaks its ribs, who writes his name on the wings, and even cuts pieces out of the fabric for souvenirs. America has no patent on the moron; he abounds in all countries. But in foreign countries he is more humble, and is easily kept at bay by the police. Over here, he is allowed to crowd

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around and make a nuisance of himself.

Commander de Pinedo has accomplished a great flight, he has overcome many difficulties, survived many dangers. But when he came squarely up against the great American moron, he went down to defeat. We can only offer our sympathy—the moron beats us all.

THE plane *American Legion* in which Commander Noel Davis will attempt the flight from New York to Paris was christened by Mrs. Davis, who broke a bottle of ginger ale on the propeller. Out of respect for the eighteenth amendment and Wayne B. Wheeler, it was doubtless dry ginger ale.

AN eighty-year old Easter egg, dated Feb. 28, 1847, is a relic exhibited in Hagerstown, Md. That is not the proper place to keep it. The ancient egg should be presented to the Navy Department, and should be mounted in a case beside those cute little models of battleships they keep in the Navy Building.

PERHAPS you folks missed one of the dispatches from that shrewd, humorous, observing American, Mr. Will Rogers. He's a remarkable man, and the only unofficial American diplomat who ever crossed the ocean and kidded the English. The official ones all go over and get kidded themselves—the only thing they bring back is an English accent and a Scotch breath.

I take this dispatch from the *Boston Globe,* who were kind enough to reprint one of my articles and not pay me for it—so I'll take this one for nothing, and call the matter square:

> See by the paper this morning Secretary Wilbur says there is no danger from Europe from aeroplanes.
>
> When we nearly lose the next war, as we probably will, we can lay it on to one thing and that will be the jealousy of the Army and Navy toward aviation. They have belittled it ever since it started and will keep on doing it till they have something dropped on them from one and even then they will say it wasn't a success.
>
> WILL ROGERS.

And on the same date I saw by the paper that Secretary Wilbur was in jail. But they let him out again. Seems he was only in on an inspection tour of the Stateville penetentiary. Now if any of you folks want to help aviation, get me appointed warden of that jug—and send Wilbur around again.

POOR Dear Harvard! They can't get away with anything. Here they went to work and founded a flying club so they could get away from those rough Princeton fellows—and now I see by the gnuspapers that Princeton is going right up into the air after them. The intrepid Princetonian is George Lambert of St. Louis. I don't know him, but I suppose he is related to Colonel Lambert who gave St. Louis that wonderful flying field.

The Lambert family have always been interested in the air. They're the people who put out Listerine to take the kick out of halitosis, you know. Air-minded people. Then, having purified the air, they decided to make it interesting by encouraging airplanes to float around in it, with the natural result that George Lambert—I'm taking it for granted he belongs to the same air-minded family—gets an airplane of his own and flies around the Princeton campus.

(Continued on page 476)

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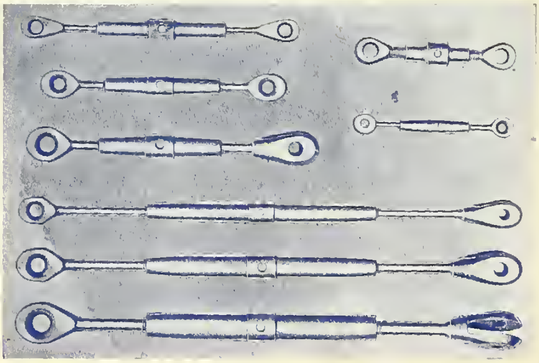

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(*Continued from page 475*)

But this puts a problem squarely up to the faculty. They've barred students' automobiles. Will they bar students' airplanes? You see, a girl could get out of an automobile and walk home. But in an airplane, what can she do? Only thing I see for it is for the faculty to invest in a bunch of parachutes. Then any girl going for a ride with a student should call on the Dean of Princeton first, and get issued a parachute. As Lieut. Hunter remarked, you never know when you need a parachute.

POLITICIANS are the same the world over, and no matter what language they speak, the use of one certain word is international. And that word is "gimme." Over in this country the politicians say "Gimme more salary, gimme free printing of my speeches, gimme free postage to send them around the country, gimme this, gimme that." But over in Germany they yowl, "Gimme a free ride on the airlines." The Reichstag Deputies already ride free on the railways, but as the State subsidized the airlines, they want to ride free on them too. So negotiations are under way to reserve so many seats each day for the wind-bags. The poor old airlines are trying hard to make a little money—and now they have to carry these dead-beats. That's where we have the advantage over here. Our officials wouldn't even ride free.

IN recognition of his outstanding work in American aviation, the Honorable Casey Jones has been granted the title of Baron Island by His Majesty, the King of Boobitania.

His Majesty was informed that while Casey was flying at a low altitude—an altitude even lower than the intelligence of some of our political gents—he had engine trouble and was forced to land on Barren Island, in Jamaica Bay, Brooklyn. At once His Majesty remarked, "Good! I create him Baron Island."

THE Ford three-motored airplane was saved from the fire in the National Air Transport Company's hangar at Kansas City. It was too big to go in the hangar. That's another point in favor of that plane of yours, Henry.

JUST a little cultural note in case any of you six readers are coming to New York. We've got the place all cleaned up for you—morally, that is. You can come here now without endangering your morals, if any. We've shut up some of the more subversive shows, haled some of the actors into court, and raised hell generally in a Puritanical, Comstockical manner. We've got ourselves so pure that visitors simply look at us and gasp, and then shove a white lily into our hands and beat it.

Of course, our city garbage department still drops more garbage onto the street than it dumps into the trucks, but that's a detail. Our minds and hearts are pure, that's the point.

Collingswood, N. J., has caught the uplift from us; they're purifying themselves. Under a "vice and morality" law adopted by the Borough Council any woman or girl who wears knickers on the streets is subject to a $200 fine or 90 days in jail. It's very lucky for my wife and me that we didn't land in Collingswood when we were flying around the country last winter in a Travel Air. She'd have been pinched for sure, for she wore knickers. Yes, sir, I blush to confess it, but she wore knickers that would have come under the "vice and morality" law. But she wore them innocently, I'll say that for her. You know the devastating effect of short skirts and teddies on air-mechanics—especially when the girl is getting into and out of an airplane with the prop stirring up a breeze. Well, she wanted to spare those boys, so she wore knickers. Good Lord! And she might have got into jail simply for sparing the feelings of those mechanics.

ACOSTA and Chamberlin's new endurance record of 51 hours in the air is another triumph of matrimony over matter. You will note that both Acosta and Chamberlin are married men. There lies the secret of their success—single men could not have done it. It takes the gruelling hardships of married life to fit a man to stay 51 hours in the air. You take a man who's been married several years—he can stand anything. A 51-hour flight, for instance, is monotonous. Well, a married man is used to that. And as to staying awake—if you who read this are married, just look back over the number of nights you have lain awake listening to the wifely exposition of some fine point of husbandly conduct. It's all in the training, you see. A husband gets sort of numb after a while; he's practically impervious to suffering.

They had trouble with their food and water supply. The milk turned sour, the soup turned bad, and the water got contaminated by the unclean canteens. A single man would have come down at once. But these two housekeeping veterans were inured to hardship, to starvation. They had previously gone through that trying period wherein a bride is learning what horrors may be concocted on a gas range. And they had survived. Now this 51-hour flight was simply a weak imitation of the period of desperation immediately following the honeymoon—it was a sort of a second post-honeymoon experience for Acosta and Chamberlin. They stood it nobly.

Both wives were awaiting their husbands on the field. That alone was sufficient to spur them on to renewed endeavor to stay away from the earth for a few hours longer. In fact, that may have been the deciding factor. Suppose Daddy Browning had been making that flight, and Peaches had been awaiting him on the field—Daddy would have stayed up at least a week.

IN commenting on this flight in his dispatch to the *Times* Mr. Will Rogers says:

> No automobile ever went 50 hours without stopping or refueling or meeting a train at a grade crossing or something. Yet we spend a billion dollars on good roads for them. Why not a subsidy to commercial aviation? Congress is waiting two more wars to see if they are practical. This better make us think. Fifty hours—they can send 'em here from any nation in Europe.

If you are not reading a paper carrying Mr. Rogers' dispatches, I suggest that you do so. He is that rarest of all things, a really intelligent man, who combines wit and intelligence with uncommon common sense. Therefore his point of view is of value.

He says, "Why not a subsidy to commercial aviation?" Why not, indeed? Simply because the American mind will not tolerate the use of the word "subsidy." But an indirect government subsidy exists for very many activities. All harbor work and road work is an indirect subsidy to those who operate ships and vehicles; the tariff is an indirect subsidy to all protected industries; the millions spent by the government on air mail is an indirect subsidy to avia-

(*Continued on page 479*)

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(*Continued from page 477*)

tion; and the letting of air mail contracts and the installation and maintenance of airways is another indirect subsidy. We who are interested in aviation are content that aviation should receive that aid, under any name. But some of us, myself among them, believe that the aid—and you needn't call it "subsidy" if the word offends—should be given much more freely at this embryo stage of the game. For we believe that commercial aviation, whether it wants to be or not, and whether or not it is conscious of it, is in effect a subsidiary arm of the nation's air defense—which point I hope to make clear in a future article in AERO DIGEST.

BY the way, before I forget it, how many of you six readers of this column are flying from New York to Paris this year? What? Only five of you? Tut, tut! And I so wanted you boys to line up 100 per cent. Well, now, that's right disappointing. But I'll tell you—perhaps you six readers would be more distinguished, or distangay, as we used to say over in Paris, if you stayed home here and let all the other pilots in the United States fly over.

For they're all going, every last one of them. I've seen pictures in the gnuspapers of nearly every pilot in the country, standing beside a plane or a propeller, or an engine. One guy was standing and holding an electric fan—he was going to fly over on that. And the rest of them had selected practically anything from a fan up—or down. Well, it's all highly diverting, and I hope they all get there without crowding or bumping into each other.

You know, this flying business is just like that English Channel swimming gag. There the Channel had been for years—just so many gallons of wetness. Along comes a woman and swims across. Instantly a hundred people bob up and try it too. Each trying to beat the other.

Now the great bee in every pilot's bonnet is to hop from New York to Paris to win a $25,000 prize. It will cost probably $150,000 to win it, but it's worth it—in publicity. And you can get a lot of publicity by merely announcing that you're going over. You don't have to go. Just step into a gnuspaper office and say to a man, "New York Paris, one way." "Right!" he says, "Pose this way—keep your eye on the little birdie!" Click! And there you are with your photo taken for the afternoon edition. It's got so now they have a Jennie prop in most gnuspaper offices for you to lean against. Then the picture comes out headed "Pilot Goof, who will try New York to Paris hop, standing beside propeller to be used on his ship."

I went in and tried it myself, on C. B. Allen, of the *New York World*. "Allen," I said, "New York Paris, one way." "Hell, Cy," said C.B. "I'm sorry, but we're all out of film. We've taken 79 to-day—had to get out an enlarged edition."

Well, I'll tell you candidly, I wouldn't be bothered going over there in an airplane—too common. I'm going by balloon, powered with an OX5, the backbone of American aviation. And just to be original I'm going to have the basket and the engine and all the rest of the weight on top of the bag, instead of hanging down. I think I'll excite more remark that way, which seems to be what everyone is after, when all is said and done.

I HAVE just learned of the unfortunate crash of Commander Byrd's plane. As the wrecked plane will be repaired some weeks before Byrd, Bennett and Noville are,

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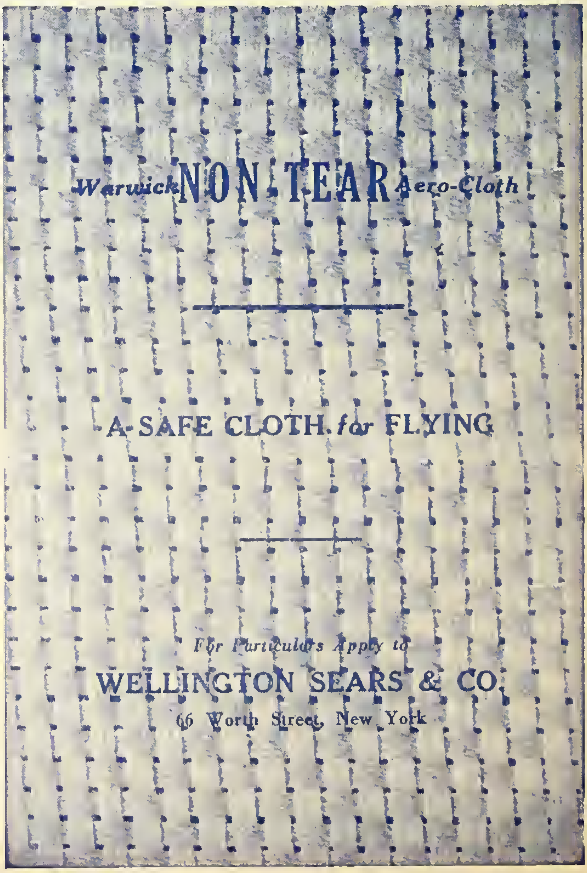

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Mr. Wanamaker may require the services of a substitute pilot—if the other boys are not to beat him in the race. I offer myself for the job. I think I'm entitled to it, too. I've traded in Wanamaker's bargain basement for years, helping to augment the Wanamaker fortune. And in all that time I have not had so much as a kind word from Rodman Wanamaker—not a word. I've felt hurt about it, too. "Is Rodman in?" I've asked the girl time and again and when I went down to get myself a pair of slightly shop-worn sox or something like that. "No," she'd say. "He isn't in." I don't think he spends much of his time in the shop, if you ask me.

Anyhow, here's his chance to show his appreciation of my custom, such as it is. He can let me fly that plane for him from New York to Paris. I can fly it, too, and am willing to deposit with any bank in the city $1,000, which is my entire fortune, as a guarantee that I will not make one of Tony Fokker's perfect two-point landings—front motor and wing—but will use *three* previously selected points, the two wheels and the tail-skid, as is my custom in these hard times.

And speaking of hard times, that's why I want to make this flight. I'll be candid, folks. I am not going for the glory. No, indeed. I brought back a modicum of glory from the war—and my landlord will not accept it in lieu of rent. I'm all through looking for glory. What I want now is cash. I'll split the prize evenly—I'll take the $25,000 and Rodman can take the glory, every bit of it. I'm even willing to fly under a nom-de-plane—they can keep my name out of it entirely, and say the flight was made by someone else. In fact, what I'm after is the money, solely.

Of course, this candid admission of my commercial cravings may lower me in the opinion of Messrs. Wanamaker and Byrd, for they have made it plain that they are undertaking this flight solely for the honor. But they must remember that I haven't had a profitable winter on the lecture platform—I've spent the winter in an empty implement shelter in Van Cortlandt Park—and nobody ever left me a department store either. In fact, if all my relatives went to their reward to-morrow I'd simply be out the cost of flowers. So our cases are entirely different.

And that's lucky. Rodman wants his plane to have the honor, and my wife wants me to have the money. Well, let's get together. He'll have to change his plans and enter the *America* in the contest for the $25,000—how I love even writing down that amount! I've seen it in the papers so often that I dream about it.

However, I don't want to scare Mr. Wanamaker off me by talking too much about money. He mustn't worry about that—I'll take all the money, all the sordid commercial consideration and leave him the honor of having his plane first over—and right side up.

Of course, I'm not a trained navigator, but it isn't necessary that I should be. All I have to do is to fly East—it's impossible to miss Europe. And when I get to a country where the natives are busily engaged in fleecing American tourists, I'll know I'm in France. And when I pass over a city and hear the moans of husbands buying expensive hats and clothes for wives—and sometimes not for wives—I'll know I'm over Paris.

Now, I write thus jokingly, but would it be straining your credulity too much to believe that I am in earnest in making this offer to fly to Paris? And in making this offer I am not bidding for any admiration as a bold aviator.

(*Continued on page 480*)

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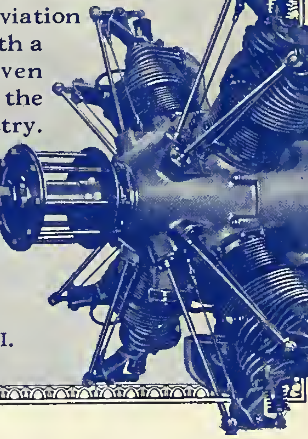

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(*Continued from page 479*)

Far from it. I admit candidly that once I left Newfoundland behind and hit out over the rolling Atlantic, I would be one nervous bozo until I saw the coast of Ireland. But folks, you'd be amazed at the amount of scaring I could stand for $25,000—yes, and for $12,500, for I am willing to split with another pilot. I wouldn't do it for a cent less, and I'd only take that because I am not convinced that I could stay awake long enough to get across alone. I'd like a partner, and if he's a trained navigator, all the better. But he doesn't have to be. I've found the Pittsburgh flying field through the Pittsburgh smoke, and after that finding Paris is child's-play.

AIR—HOT AND OTHERWISE

(*Continued from page 376*)

had used the pages of his publication to help Patrick in his gallant fight against great odds he would have deserved at least a good mark on the Angel's books even though his efforts had been futile. But through all history the way of the various Let's Don't Gos has been to move perhaps with violence but without constructive plan and therefore without progression. Like grasshoppers they hop from weed to weed. Enough grasshoppers may constitute a plague, but fortunately they usually are not that numerous and do little harm. So it is safe, we think, to counter the initials L. D. G., with L. F. H., these meaning: Let's Forget Him.

At the end of the World War conditions in the Army Air Corps could be described by several words, of which confusion would be the least offensive. When we entered that great struggle our aviation was represented by a section of the Signal Corps comprising 65 officers and 1,087 enlisted men. When the war ended this small group had been expanded into 18,089 officers and 133,644 men. Then, of course, came readjustment downward.

The problem of creating for our military aviation such a new plan as would preserve and perfect it as a permanent establishment was not settled till the passage of the Army Reorganization Act in 1920, when the Army Air Corps was made a separate branch, supposedly co-equal with the others—artillery, infantry, cavalry and so on.

When Major General Mason M. Patrick took his oath as Chief of the United States Air Corps in October, 1921, the hard task confronting him was the restoration and support of morale in a service which had been totally discouraged and practically abandoned. It wasn't child's play.

Most of the efficient officers of the Air Corps, skilled pilots all of them, men of creditable history in national service and some of them of literally magnificent war records, resigned, for they could see no hope in the service of such future advancement as would be satisfactory to a normal American ambition.

That, however, was only the beginning of the difficulty in the situation Patrick found in the Department when he went in as Air Corps chief. This was to be expected. He soon discovered other troubles which probably surprised him. He was a lonely striver in a hostile wilderness.

Especially, there in the War and Navy buildings, snakes roamed freely—the impulses of the vanishing regime which did not want to vanish.

Fortunately he bears the same name as the justly celebrated patron saint of Ireland and this helped him, at least psychologically, to do competently much work of the same sort as that which busied the energetic Roman missionary who made the elimination of all crawling reptiles out of Ireland co-eventful with the evangelization of that emeraldhued, delightful bit of terra firma.

Saint Patrick hated snakes. Well, General Patrick got just as mad at the departmental snakes as the good Saint got at those infesting the lush sod which we whose forbears sprang thence now designate with loving Celtic accent as "owld." But the General, while very powerful and efficient, had far more to contend with and less time to do it in. St. Patrick fully cleaned up Ireland. Some snakes are left in Washington. But it's no fault of the General's.

Everything carefully considered American aviation has good reason to be thankful that it was General Patrick who was put in that important pose. One of less distinguished qualities might have accomplished little. Once a man of just as Irish origin who had been working in an excavation was called upon to write an epitaph for a fine fellow-workman whom he had last seen soaring upward with a mighty blast as driving power. "If Mike Rourke ain't got to Heaven," said the epitaph, "it ain't his fault. I surely seen him start in that general direction."

So it has been with General Patrick. If he has been unable to completely energize, entirely cleanse, wholly educate the minds of the members of the General Staff, Senators, Congressmen, and politicians so that they are able to see what an adequate air defense means to the United States it has not been his fault. He made as fine a start as one man, working against odds, could make in that general direction. You still have to watch your mental step in Washington to keep from treading upon bureaucratic thoughts that crawl, but because there has been a General Patrick there are less of these infernal pests about the capital city than there would be had he never had a whack at 'em.

It was in February, 1923, that General Patrick submitted to the Secretary of War his recommendations as to reorganization of the Air Corps. The Secretary convened a board, of which Major General Lassiter was senior member, with a view to drawing up a program and putting it into effect. The Lassiter Board, as it was known, studied all the angles of the problem—production, procurement, peace strength, war strength, personnel, materiel and distribution. The proceedings of the Board were approved by the Secretary of War, April 23, 1923.

Patrick went as far as he could go to secure such increase of air personnel as he knew to be essential to the safety of the nation. His reasoning was fundamentally right. Perhaps airplanes can be quickly built in an emergency, but men to operate them must achieve the art through long and gruelling study and practice.

Chief among the General's troubles has been the failure of the General Staff to coöperate in the huge task at which its obvious duty was to help him. He tried. Year after year he gave this stubbornly inert mass of intellectual dough the information that war in modern times had swept men from the backs of horses into the cockpits of aircraft. But it just could not believe him. The members of the General Staff, apparently, are busy puzzling out just how the Russians licked Napoleon at Moscow. Almost all of Patrick's pleas to this Sphinx-like group of uniformed reactionaries—Sphinx-like only in the complete solidity of the material which occupies that head room normally devoted to brain cavity—have been ignored.

That, single-handed, he accomplished even a little of the needed reorganization marks him as a miracle man.

General Patrick's assistant chief, General William Mitchell, so openly attacked the evils of the situation, as he saw it, that the President named that special board which

(*Continued on page 482*)

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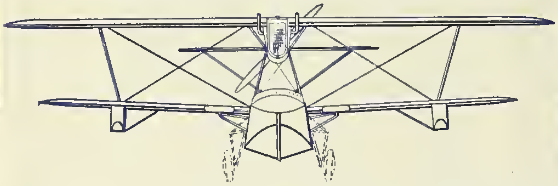

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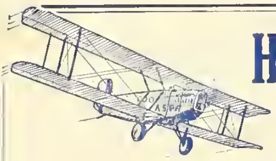

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(Continued from page 481)

resulted in the creation of the Air Corps in accordance with the Act of 1926. This contemplates 1800 serviceable planes, 1,650 commissioned officers and 15,000 enlisted men. The provisions made by the recent Congress for a start upon the realization of this problem may seem small, but they were and are a real beginning.

Many more fine things might be said of General Patrick if we had space enough to say them in. Take personnel; take supplies and suppliers. In both fields Patrick found chaos when he started and has produced order. Aircraft materiel was scattered all over the United States. Warehouses at unavailable points were full of war-built planes and motors. The administration cost was vast. Patrick's systematizations notably reduced it. He inventoried everything and concentrated it in a few points, eliminating waste to the extent of half a million dollars annually, while greatly increasing general efficiency.

A standard system of operation in repair depots and all engineering shops is an advance. That planes shall be rebuilt by contract whenever possible, as an evidence that every effort must be made by the Government to support the aircraft industry, has really helped where help was needed.

Several instruments important as aids to aerial navigation have been the direct fruit of his intelligent energy. Beacons, landing flares, flood lights and other related equipment have been worked out and in consequence night flying has become safe and practical. Patrick has stimulated much study of fire hazards and his crash tests at McCook Field have helped to determine the real causes of fire. Under him much research work has been done with a view to the elimination of carbon-monoxide.

The development of the parachute is another important detail of the work done by the Air Corps as the result of his constant striving to safeguard the lives of personnel. It was Patrick who made the wearing of a parachute mandatory on all flights.

Under him the Air Corps has developed air routes crisscrossing the country and linking up the various airports and special air maps are now available to and valued by commercial aviators.

His impulse has led to the establishment of comprehensive training schools in which gunnery and night flying have been given special attention. He has applied aerial photography to the various requirements of ground troops, thus facilitating coöperation between ground and air forces. The Air Corps Technical School at Chanute, Ill., maintains approximately 20 courses for training enlisted men in various trades essential to the Air Corps, including radio communication, aerial photography and parachute operation for commissioned officers.

The World Flight, which Patrick worked for and encouraged, stimulated interest in aeronautics to an unprecedented degree. No lives were lost and the American aircraft industry was advertised throughout all the nations of the earth. Everybody knows that aircraft will play a paramount rôle in future wars and this achievement by Americans in American machines inevitably powerfully directed world attention to the potential combat competence of this great nation.

Neither of the Patricks, General nor Saint, ever was known to strike below the belt, a detail in which their records remain different from that of Let's Don't Go.

POWER AND PROPULSION AT ALTITUDES

(*Concluded from page 379*)

increase in maximum speeds, but this decrease is less rapid toward higher speeds. Colonel Crocco points out that this method of propulsion is applicable only for speeds much higher than the present ones and expresses hope of future planes being capable of covering the Rome to Paris route in forty-five minutes; that is at the rate of about 800 miles an hour.

The subject of this article is so vast and technical that it is possible to present it here only in a brief and general way. The aim is to acquaint the reader with the general trend of this important branch of engineering and indirectly to encourage the technical imagination, the instigator of successful invention.

AIR TRANSPORTATION IN SOUTH AMERICA

(*Concluded from page 374*)

over the world and in all walks of life. In former days the pioneer found more contentment, greater freedom and often all around better living conditions in the wilderness than in the country he came from. To-day that is no longer true, a point that is frequently overlooked by those who bewail the fact that "the old pioneer spirit is no more."

The airplane, however, offers possibilities to the colonizing community that the covered wagon and even the railroad never could attain. It places remote communities within a day's instead of weeks' reach of their base of supplies and the markets for their products. It will enable communities to grow and prosper in places yet hardly fit for human beings to live in. And as these cities of the future will of necessity be located on the banks of rivers they will make economically possible the development of navigation and even the exploitation of local railroad enterprises. The former to carry the heavy freight, the product of the forest, plantation or the mine to the world, the latter to make habitable the immediate surrounding districts. But the airplane will be the *Deus ex Machina* that makes it all possible, and that will always remain to keep the communities which it has created, no matter how remote, in swift communication with the outside world.

THE NEXT PARADE

(*Continued from page 388*)

Emergency at the Robert Treat. You gotta flying Colonel on board. Take care of him——"

That first morning afterwards—there was no doubt left.

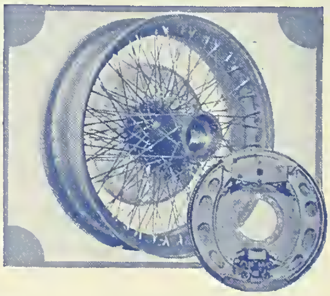
Dawn crept into the side streets of Manhattan on tiptoe and grinned sheepishly with a sickly light. Already there were new patrols to take the place of the ones that had passed with the night before. It had all been a frightful mistake somehow—a hideous dream that had lived and become an actuality. The truncated jaggedness of the lower skyline gaped starkly against the gray sky. Gas pools stank in the gutters. "Someone would pay—someone would *have* to pay. This is *our* Country, damn it—a white man's country!"

At the armories the casualty lists were checked and posted but the most important work in hand was the entraining. As soon as the engineers finished work on the damaged bridges—the troops were off for the west on through-trains to meet the blow that had fallen simultaneously on the Pacific Coast. Scofield was gone and the Presidio.

Outside the Harbor, a thin web of destroyers was sweeping the seas, firing quickly and mercilessly at all the enemy

(*Concluded on page 484*)

SAUZEDDE
WHEEL AND BRAKE UNITS



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Contractors to United States Government

MacCready's High Altitude Plane Was Equipped with Belden Wire

THE LePere Airplane used by Lieut. J. MacCready in establishing the American High Altitude Record of 43,000 feet at McCook Field was equipped with Belden Wire in all low tension electrical circuits.

The experience of Belden Engineers, acquired in providing wire and cable for planes making the greatest achievements of airplane history, is at your service. Write for it!

Belden Manufacturing Co. 2304-B S. Western Av. Chicago, Illinois

Specify Belden

Consult Belden Airplane Engineers regarding specially designed airplane harness—either shielded or unshielded—or other wiring problems.

(Concluded from page 483)

planes that came down to refuel—wiping them out one by one with quick shell bursts.

The bulletins at the Times Building told as much of the story as could be told. Boston had been missed entirely, but Washington, Newark, Philadelphia and Pittsburgh had been thoroughly egged. It would be a long war—how long no one knew. San Francisco and Seattle were in the enemy's hands but he'd never cross the mountains—never.

England had thrown down the gauntlet at three-thirty a.m. and come in. The fleet was out and on its way. Canadian troops were already across the border streaking for the west to hold the tide at the mountains—gigantic Vimy to be fought all over again.

There would be universal conscription in a day or so and officers' camps and a Liberty Loan and all the old, old paraphernalia that everyone remembered but no one had ever thought would be needed again.

And there would be airplanes—in great quantities. Every factory that could, would start turning out airplane parts. "The war must be won in the air." It sounded vaguely familiar somehow. Everyone seemed to have remembered hearing it before—but no one could tell exactly where.

At the Robert Treat, the O. C. Mineola heard some of this from the ward nurse. He couldn't seem to settle down to sleep. His legs were splinted and bandaged under the covers. Vaguely in his heart, an imp of hilarity danced. He called to the nurse who had brought him the bulletins.

"Wake me when my casualty lists are in."

The girl smiled. "Right," she said.

"And nurse," said the O. C. ——

"Yes?"

"Hadn't we better wire Washington to invent a slogan

PLYWOOD
Water Resistant Panels
Made According to
Government Specification
Sizes up to 16'-0" x 6'-4"
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The most complete stock of
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FULL LIFE INSURANCE FOR THOSE WHO FLY HAS BEEN A LONG FELT WANT, AND WE HAVE MUCH PLEASURE IN ANNOUNCING THAT WE ARE NOW IN A POSITION TO SUPPLY THIS ESSENTIAL COVERAGE

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Damage to ground property

LOWEST RATES
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HIGHEST INDEMNITIES

Public liability
Property Damage
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Personal Accident
Compensation

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Underwriting Agents
TEL. ASHLAND 9373

285 Madison Avenue
NEW YORK CITY

and not to forget to start work on designs for another Victory Medal?"

And a man in the next bed said, "If I'd known I was going to be used for anything besides inspecting beef in Chicago, I'd never of gone into the Reserve Corps."

And the pacifists having used the superlative on the World War were wondering what to call this one—

And the parade was on.

PAN-AMERICAN FLIGHT

(Concluded from page 373)

they, on landing, will be met by President Coolidge, Assistant Secretary of War F. Trubee Davison, Major General Mason M. Patrick, Brig. Gen. James E. Fechet, Assistant of the Chief of Air Corps, dignitaries representing foreign nations especially those of the Pan-American Union, and a pursuit squadron of Army planes enroute from Selfridge Field, Michigan, to the Air Corps Maneuvers at San Antonio, Texas.

The planes will be overhauled and put on exhibition at the All America Aircraft Show which will be held at Bolling Field, May 2 to 10, in connection with the Pan-American Commercial Conference and the annual meeting of the United States Chamber of Commerce.

At every stop they were greeted with enthusiasm and cordiality. As Major Dargue says, "We thoroughly enjoyed our trip. It was tiresome to be sure, but the interest and adventure that was always ahead of us kept us on our toes. We were received most cordially in all of the countries we visited. We were entertained by Presidents and Ministers and Generals. We were welcomed everywhere. We were on a mission of good-will, and we received the greatest of assistance in the accomplishment of our objective."

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Specialists in
Metal spinnings and hand-hammered work in all kinds of sheet metal.
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STANDARD EQUIPMENT FOR
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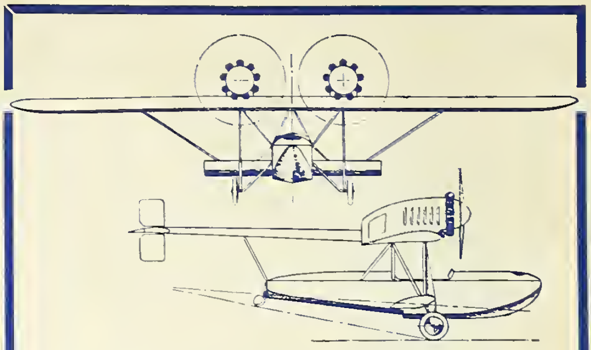


SIKORSKY
TWIN-MOTORED
AMPHIBIAN

FOR those who have felt the handicap of insufficient landing fields the Sikorsky Twin-Motored Amphibian affords the possibility of using the waterways for landings and take-offs in addition to the existing aerodromes.

Equipped with Sikorsky patented compensating rudders these ships have the ability to fly on one motor with full load which greatly increases safety of operation.

These ships can be supplied without landing gear and used as flying boats.

Made in both open and closed models.
Useful load 2000 pounds.
Accommodations for 6 or 8 passengers.
Power plant—two Wright Whirlwind 200 h.p. air-cooled engines.

Sikorsky Manufacturing Corporation
250 West 57th Street New York City
Manufacturers of all types of military and commercial aircraft

STINSON-DETROITERS' RECORD

(*Continued from page 384*)

ratio, a characteristic which insures safety because it enables the pilot to land on any field within a large radius in case his motor cuts out.

An easily adjustable stabilizer is used instead of the slow-winding type. The Detroiter's may be set from full on to full off by merely pulling on a lever similar to an automobile's hand-brake, and may be set in any position instantly.

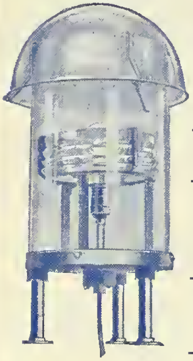
The ship empty weighs 1,700 pounds yet it may be loaded with 1,450 pounds of merchandise, oil, gasoline and passengers without unduly taxing its lifting power or endangering its airworthiness.

Seventy gallons of gasoline are carried in three tanks placed in the wings. A switch on the dash board will direct the contents of any one or all of these reservoirs. Feed is by gravity. Five gallons of oil are carried in a tank beneath the cowling from where it is automatically pumped to the motor.

The plane is 28 feet 10 inches long and 10 feet 7 inches high. It has a 63 inch cord (both wings) with a Clark Y airfoil.

The wing span is 35 feet 10 inches while the span of the tail plane is 12 feet. Wing loading is estimated at 8.28 pounds per square foot and power loading at 14.5 pounds per square foot. Flying range, 500 miles; cruising speed of 105 miles an hour. It has an initial climb of 800 feet per minute to a service ceiling of 13,500 feet.

The company has developed a new experimental monoplane employing an airfoil said to be the most efficient



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- — Low initial cost and economy of operation.

Every airport should have its own distinctive flashing beacon. May we tell you more about it? Write for catalog.

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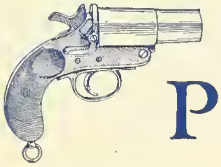

VERY PISTOLS

for signalling or illumination purposes and to meet Government Regulations about to come into force.

The pistols are easy to handle and fitted with safety breech lock making them absolutely fool-proof. Fires cartridges loaded with stars which burn for a considerable time and are visible at distances from ten to fifteen miles. The candle power of the star varies from about 7,000 for the small stars up to 15,000 for the larger stars.

PISTOLS

	Price each
1 in. gauge, solid bronze barrel	$15.00
1½ in. gauge, steel barrel	17.50
1½ in. gauge, 10 in. barrel and shoulder butt	20.00

CARTRIDGES

	Per 25
1 in., red or green or white star	$5.00
1½ in., yellow or red or green star	7.50
1½ in., with change color star; red to white or green to red	8.00
1½ in., long; with parachute; change color star; white to green or white to red	16.25

(All the above are for night use.)

The undernoted are for day use:

1½ in. cartridges, long; with parachute; red smoke star,	$16.25

All prices are f.o.b. New York

We also have complete supplies of general aviation pyrotechnics.

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New production wings, finished with pigment silver or gold color: uppers, **$120**; lowers, **$90**. Special price complete set	**$390.00**
New steel type balanced rudders, with wood finish	**55.00**
New steel type, flippers	**52.50**
43-gallon center section tank, enclosed in plywood case with bulkheads fore and aft and covered with linen to protect from moisture, including all gasoline connections and sight feed gas gauge	**120.00**
New type steel landing gear, including axle for DH wheel, less wheels	**95.00**
DH wheels	**8.50**
Aluminum streamline for DH wheels, per set	**15.00**
Steel tail skid for Standard	**12.50**
Our new type metal adjustable overhangs for standards, including all fittings ready to install, per set	**70.00**
Steel ladders, each **$15.00**; per pair	**25.00**
Exhaust pipes with extensions at front of motor, extra large, per set	**55.00**
Side type radiators such as used on LS-5, cartridge core, each	**52.00**
Steel wing skids, per pair	**15.00**
Hamilton propellers, especially designed for Standards; for 150 h. p. Hispano motor	**110.00**
For 180 h. p. Hispano motor	**120.00**

We have everything in stock for a Standard plane or Hispano motors. WRITE US YOUR WANTS.

Lincoln Standard Aircraft Company
LINCOLN, NEBRASKA

yet discovered in the field of aeronautics. The new design is expected to give at least a ten mile additional cruising speed to the ship and increase its maximum speed almost 20 miles. Due to the new airfoil, Stinson has succeeded in keeping a constant center of pressure on the ship. In a dive the pressure travels forward on the wing instead of back, thus decreasing the landing speed on the monoplane and making it fool-proof, inasmuch as the ship cannot go off on a wing when stalled or go into a tail spin.

Besides this feature the company has perfected a tube control system to eliminate nearly all wires and cables. Also, for the first time in the history of the industry air brakes and an air starter are being employed on this new monoplane. Air is supplied by an engine pump and stored in a small tank.

The wing span on the monoplane is 45 feet with a wing area of 219 square feet. The fuselage is the same as on the Stinson-Detroiter biplane.

New improvements have been made on the cabin of this ship. It has been extended further back in the fuselage and room for five persons made. Instead of the removable seats being arranged as in a sedan—leather upholstered with Marshal springs—they will be of wicker with Kopac cushions. On either side of the fifth chair is room for passengers' baggage or express. As is the case on the Detroiter, control will be dual. The ship is said to be capable of 130 miles at top speed and have a cruising speed of 107 m.p.h.

After the new Stinson monoplane has been put through a number of thorough flight tests during which its capabilities will be demonstrated, a more complete report of its performance will be given out.

Congratulations!

To those who participated in the Pan American Flight we wish to offer our sincere congratulations for a difficult task well done.

The Loening Amphibians used on the Pan American Flight were equipped with

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Write for Circular A-1, describing Hartshorn Aircraft Products.

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Established 1860

SOME REAL BARGAINS!

FOR THE MONTHS OF MAY AND JUNE WE OFFER THE FOLLOWING LOW PRICES TO THE TRADE. NO DISCOUNTS AND NOTHING AFTER JUNE 30TH AT THESE PRICES. ALL ORDERS MUST BE ACCOMPANIED BY CASH.

OX5 PARTS

Lower crankcaso, each, $9; in lots of 6, each	$ 6.00
Intake pipes, each .50c; in lots of 10, each	.35
Alum. intake elbows, ea. 1.25; in lots of 10, each	.75
Valve action assembly, reconditioned and tight as new, per cylinder	4.00
Special valves with 1/64" or 1/32" oversize stems, (make your old cylinders like new), each valve	2.25
Over-width piston rings, each	.25
Propeller hub pullers, each	1.75
New carburetors, each	12.50
JENNIE TYPE RADIATORS: Fedders, $6; Harrison cartridge core, $11; Rome-Turney	15.00
OX-5 motor, top overhauled, turns up like new	125.00

HISSO PARTS

Model A crankcase, top or bottom half, each	50.00
Exhaust manifolds, each side	5.00
Model A or E Zenith carburetor	17.50
Piston rings, ea., 50c; set of 40, ea., 30c; lot of 100, ea	.20
Salt cooled valves, regular size, each	2.50
Salt cooled valves, oversize head, each	4.50
Tulip valves (Silchrome), each	8.00
Magnetos, each	25.00
JN6H type nose radiator	40.00

LIBERTY PARTS

Propeller hubs, Army or Navy type, complete, each	4.00
Propeller hub bolts, each	.25
Hose clamps ea., 3c; per 100, $2.50, per M.	20.00
Wiring looms, slightly used	4.00
Spark plug terminal connections, each	.10
Spark plug terminals with wires	.15
Exhaust manifolds, each side	5.00

MAGNETOS — SPARK PLUGS

Double spark 6 or 8 cyl. Berling	$25.00
Hisso mags.	25.00
New heavy Berling platinum breaker points, each	1.75
Magneto tool kits containing numerous handy wrenches	.50
New B-G plugs for high compression Hissos, each	1.25
Reconditioned B-G or Moslers, each	.50
Reconditioned A-C, in any quantity, each	.15
New A-C each, 25c; lots of 100, 20c; lots of 1000, ea.	.15
New Bethlehem, ea., 15c; lots of 100, ea.	.09

INSTRUMENTS — GAUGES — SWITCHES

New oil gauges, each, 90c; in lots of 10, each,	$ .75
Magnetic gas gauges ea., $1.50; in lots of 10, ea.	1.25
New distance type thermometers, each	5.50
Gasoline filters, large capacity, each	2.75
Dixie double magneto switches, each	1.25

CABLE — WIRE — SHACKLES — CLEVIS PINS

⅛" flexible cable, per ft., 5c; in 100 ft. lots	.04½
5/32" extra flex. cable, per ft., 5c; in 100 ft. lots	.04
Cable strand (hard cable) 1/16", 5/64", 3/32", 7/64", ⅛", 9/64" per foot 4c; in 100 ft. lots, 3c; in 1000 ft. lots	2c
Cable strand, 3/16", 5c per foot; per 100 ft., 4c; 1000 ft.	3c
Streamlined wires (state size wanted), each	1.00
Drop forged shackles, ¼", each 4c; per 100, ea., 3c; per 1000	2c
Clevis pins, each, 3c; per 100, ea., 2c; per 1000, ea.	1¼c
Thimbles, 5/32", each 2c; per 100, ea., 1¾c; per 1000, ea.	1¼c

MISCELLANEOUS

New OX-5 toothpick propellers, assorted makes, each	$15.00
New OX-5 wide blade propellers, each	10.00
French rotary propellers, each	5.00
28 x 4 wheels (clincher or S.S.), $5.00; tires, ea.	5.00
36 x 8 wheels (clincher), $8.00; tires, ea.	10.00
½" new shock cord, per ft., 9c; in 100 ft. lots, ft.	.05
Standard J-1 landing gear shocks, all made up, each	.75
DH type wicker airplane seats, each	2.00
Aluminum round head rivets 3/32 x ¼" per pound	.50
Fine brass nails (send for sample), per pound	.40
1/16" mahogany waterproof plywood, 12" x 120", per ft.	.20
The same in quantities of 50 sheets or more, ft.	.18
⅛" mahogany plywood waterproof 36 x 72" (full sheets only), ft.	.20
WING COVERS, MADE OF COTTON, SEWN UP IN SHEETS:	
Standard J-1 upper wing, $17.00; lower wing	15.00
JN or Canuck upper wing, $14.00; lower wing	13.50
Any type rudder cover, $3.50; flippers, each $3; stabilizer	5.00
SPECIAL—Two sets of high lift wing ribs for 6 or 7 foot monoplane wing, each rib	.75

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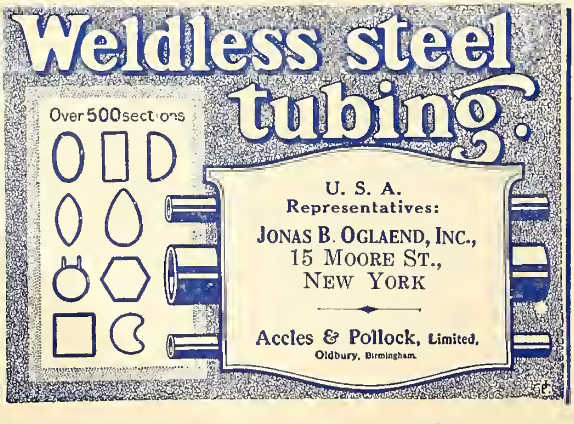

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FLIGHT TRAINING

(Continued from page 392)

recovery before actual loss of control. After intensive instruction in this, danger of an accidental spin is practically eliminated.

Of the maneuvers included in advanced training, all are essential except acrobatics. These may be omitted if desired. But if they are included considerable benefit will be derived from familiarity with unusual positions of the plane. Most schools provide advanced instruction.

The fourth factor in flight training is the instructor. Flight instruction is an art in itself, requiring experience and particular aptitude. Not all aviators are well fitted for it. Some very good pilots do not have the same success with students as do others of more moderate skill. The difference lies in ability to analyze a student's mistakes, to determine their causes and to explain them to him in a way which he can understand. In addition an instructor must be well equipped with the unspectacular virtue of patience if he is to correct the monotonous procession of errors with equanimity.

Assurance of an adequate course of training and of an experienced instructor can be had only in an established flight school. Both of these are essential for safety during solo flying. It is therefore urged that the prospective student undertake flight training only in such a school.

("The Flight School," emphasizing the importance of scientific flight training, will be Lieutenant Studley's next topic—in the June issue.)

ANZANI

AMERICAN aircraft constructors are now offered Anzani motors in various sizes from 25 h.p. to 600 h.p. (all radial aircooled) at prices which are astounding! 80 cu. in. 2-cylinder to 600 h.p. 20-cylinder.

The combination of M. Anzani, the world's most renowned aircraft engine constructor and H. L. Brownback one of America's leading authorities are now prepared, where the quantity warrants it, to design and build radial aircraft engines with iron or combination steel and aluminum cylinders and various styles of connecting rods.

Anzani quality and workmanship
are of the highest and
Anzani prices are just.

A. Anzani, *per*

H. L. Brownback, Norristown, Pa.

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The Sweeney System

first prepares a student by intensive practical work on motors, building, recovering wings, rigging and all details of construction, repairing and handling. This is called ground school work. To show you the quality of the men who teach you, look at Spencer and Wimer for instance. Spencer was an army pilot and has been teaching and doing commercial flying since 1917. Wimer is a college man, went overseas, was with the 1st Air Park as an observer, spent over 200 hours in the air and since the war has been with two big aircraft corporations.

Learn to Fly!

Aviation is no longer a mystery—no longer a hazard; no, it is a business, growing greater and more important; you can qualify as a mechanic, engineer, repair man, builder or a pilot.

opens up a world of opportunities for young men. The Sweeney System has no planes to sell, and sticks strictly to teaching both ground work and pilotage. Sweeney Airport is one of the best and safest fields in the U. S. All the resources of this **Million Dollar School** insure you the best, most practical instruction. Mechanics earn $50 to $150 a week. Flyers, up to $500.

The Sweeney System

is divided into two parts. **First:** You are thoroughly taught in the ground school. This fits you as an aviation mechanic. You can build your own plane and do anything required in aviation mechanics and construction and repairing when you have finished this work. You are thoroughly taught motors, etc., and work with thousands of dollars worth of new material, and all types of engines.

Secondly: After completing this work if you want to be a pilot you take ten hours of flying. Now when you understand that two to seven hours is all the average man needs to learn expert flying you will appreciate what ten hours in the air under skilled men will do for you.

On the ground 5 men are needed for one in the air, but if you want to become a pilot you easily master the work and can go into postal, government, or commercial work. Flyers are in demand, earning big money at fairs taking up passengers, etc. $5 for a 10 minute flight is pretty fine pay!

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DRI-O-LAC meets all requirements

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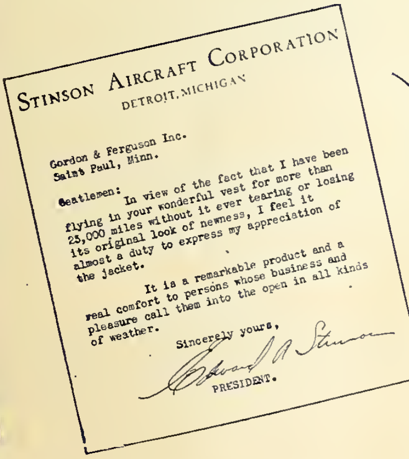

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With special reference to their adaptation for aircraft.

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For the designer, draughtsman, etc., engaged in the practical design of aircraft.

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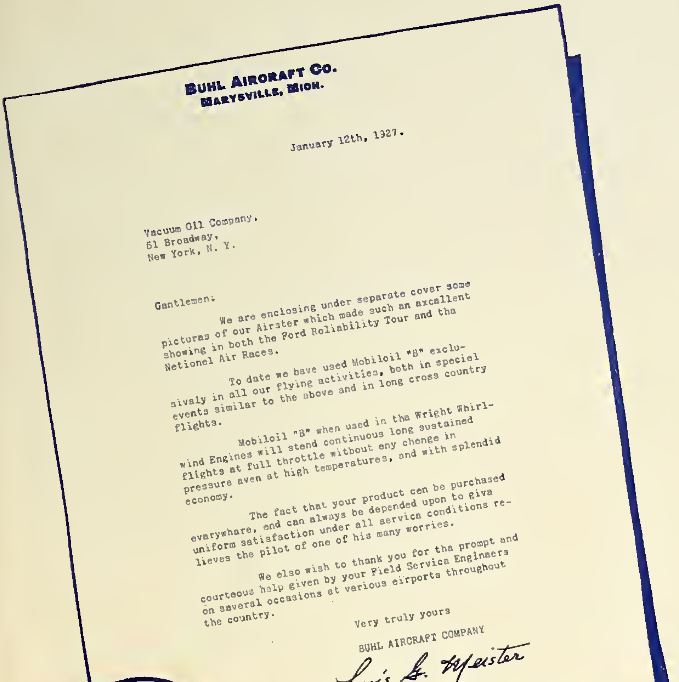

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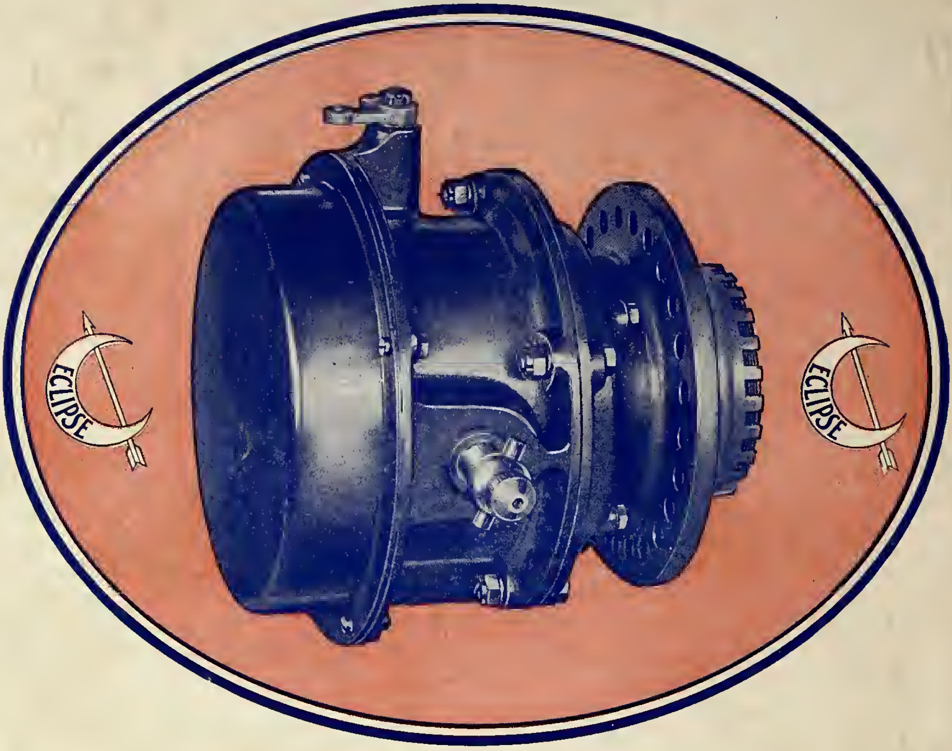

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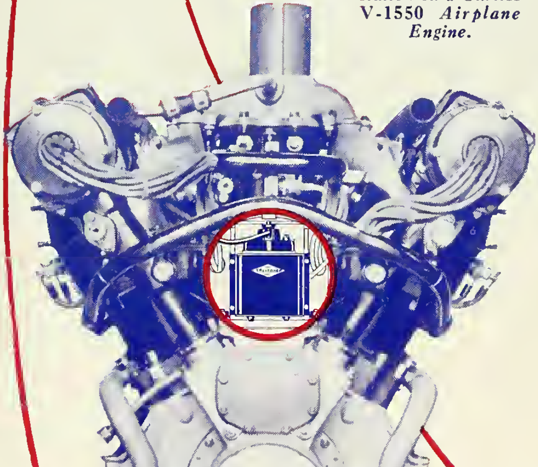

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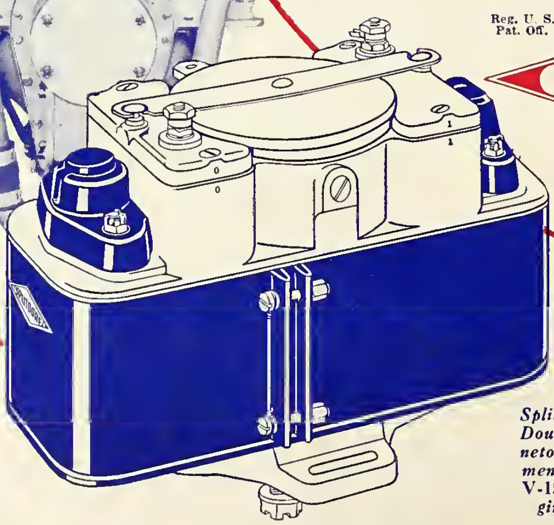

Splitdorf Model VA Double Vertical Magneto. Standard equipment on the Curtiss V-1550 Airplane Engine shown above.

AERO DIGEST, *June, 1927. Published every month. Volume X, Number 6. Publication office, 220 West 42nd Street, New York, N. Y. Subscription price $3.00 a year; single copies, 25 cents; foreign subscriptions, $4.00. Entered as second-class matter July 17, 1922, at the Post Office at New York, N. Y., under the Act of April 3, 1879.* *Copyrighted, 1927, by Aeronautical Digest Publishing Corporation.*

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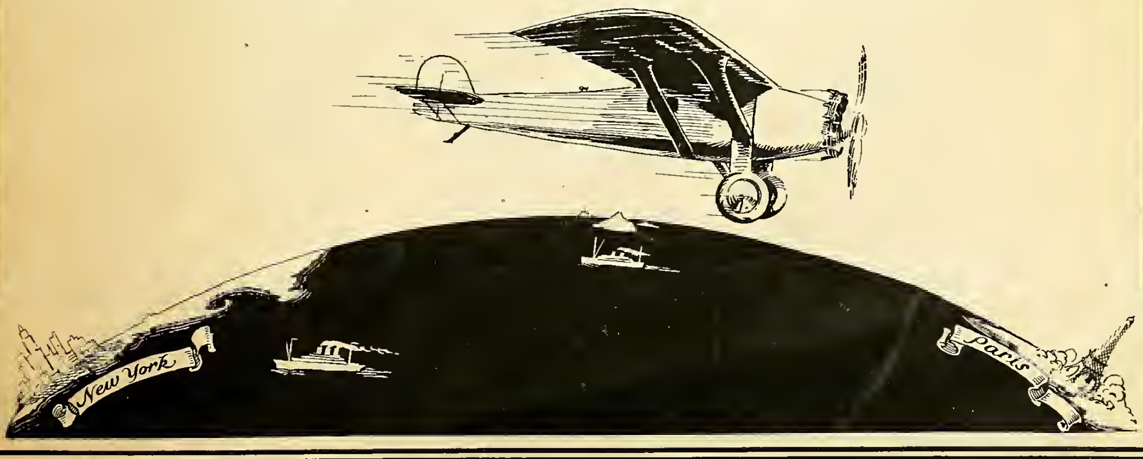

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The following telegram was received from Mr. H. H. Knight of St. Louis, one of Captain Lindbergh's principal backers: "Congratulations on important part you played in the successful flight of Captain Lindbergh in the 'Spirit of St. Louis.'"

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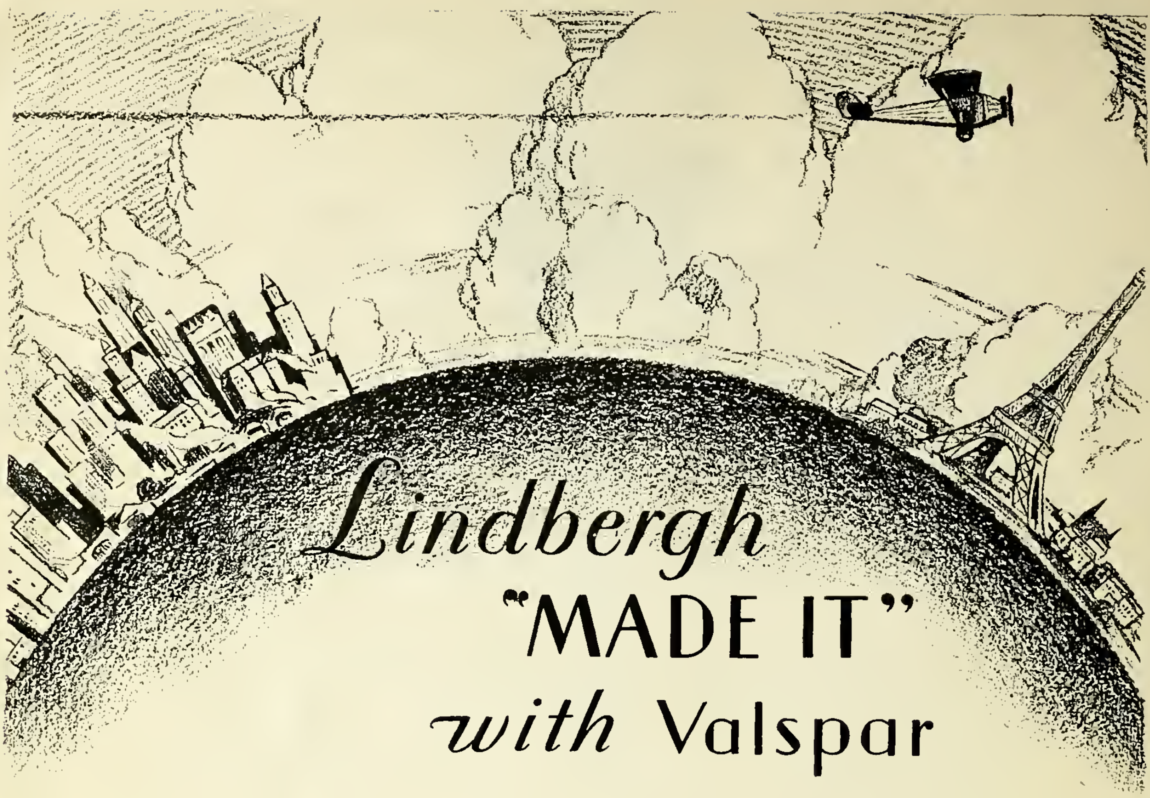

CAPTAIN LINDBERGH'S epoch-making flight from New York to Paris, which captured the imagination of the world, was made in a Valsparred plane. Mr. Mahoney, President of the Ryan Air-Lines, Inc., writes:—

> "In the construction of the Trans-Atlantic ship for Captain Lindbergh, we used Nitro-Valspar on all of the metal parts and steel tubes throughout. We find it to be far superior to any other lacquer which we have used.
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> "Valspar was used on all internal wood structure and all other wood parts of this New York to Paris ship."

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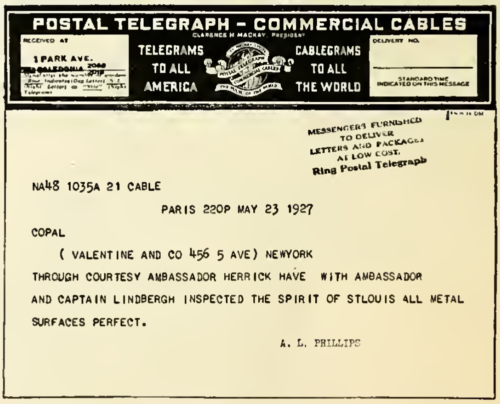

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A. L. PHILLIPS

This is the cablegram received from Mr. Phillips who inspected Captain Lindbergh's plane with Ambassador Herrick in Paris.

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AERO DIGEST
THE MAGAZINE OF THE AIR
Vol. 10 No. 6 JUNE 1927

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Charles A. Lindbergh

International Photo.

LINDBERGH'S START FOR PARIS

By

Jessie E. Horsfall

WHEN Lindbergh came down from his room into the lobby of the hotel at 2:15 on the morning of the flight, he said:

"Don't pass the word around because I am not sure I am going until I get further weather reports."

He was the least excited person in the lobby.

We had become well acquainted with him during the days of waiting after his record-breaking flight eight days before from San Diego to New York.

He got into our car and we took him to the hangar on the field through rain and absolute darkness. Probably 5,000 aviation enthusiasts were on the field despite the dreary weather.

During these crucial hours his manner was perfectly normal, his hand entirely steady, his expression wholly unexcited.

He had had little sleep but he refused the "shot" of caffein which the doctors offered; he even declined a cup of coffee before he got into his plane to hop off.

"I need no drugs to keep me awake," was his very simple comment, a part of that supreme self-confidence with which he deeply impressed everyone, not only during the slow days of waiting for favorable weather but during the final moments prior to his departure.

He took with him five sandwiches and two canteens of water. His friend from St. Louis, Mr. George J. Stumpf, representing the St. Louis backers of the enterprise, laid these supplies in the cockpit carefully so that contamination by oil or gas would be unlikely. Lindbergh said of the sandwiches:

"They will be enough for me if I get to Paris and if I don't get there they will be more than enough."

His further luggage consisted of a small white canvas dunnage bag—exactly like a mammoth tobacco sack—containing his maps and weather charts, a hunting knife and fishing tackle.

He was dressed in an immaculate flying suit consisting of a tannish grey cloth lumber jacket shirt with a wide collar which in time of need could be turned up. Underneath this was a conventional soft white shirt, with a collar and dark tie. The two pockets of his outer shirt held a fountain pen and two handkerchiefs. He wore grey Bedford cord knickers, grey golf stockings and high tan shoes. Not a grease spot was visible. His mother calls him a neat person, saying that he could clean a motor in evening dress without getting spots on his shirt front.

His silver watch had been in his pocket during four parachute jumps which he had been compelled to make in order to save his life. But in the Lindbergh estimation it was merely his watch, not a lucky charm.

A spectator commented: "Isn't he clean looking!"

A real characterization. Lindbergh looks and is mentally, morally and physically clean.

When we reached the field Neon beacon lights cast their red flashes upon the crowd but even this picturesque, unusual scene didn't distract the aviator's attention. Partly because of the crowd but mostly because of the lad's modesty, we drove to the back of his hangar. He didn't want to be hurrahed.

The patient, waiting spectators did not catch sight of him until we stopped in front of the door from which the silver nose of the "Spirit of St. Louis" gleamed in marked contrast to the surrounding velvety darkness. Then Lindbergh stepped out of the car and made a bee-line for the hangar door behind which waited his beloved ship which meant so much to him and the cause of aviation.

Immediately he had gone in to her; unseen hands closed the doors of the modest shelter which in its simplicity and unpretentiousness was in such marked contrast to the larger and elaborately painted and decorated house of the "America," Commander Byrd's transatlantic plane.

Lindbergh's hangar in its noteworthy aspects already had suggested to me the descriptive term, Air Livery, for besides the "Spirit of St. Louis" two Orioles and a Waco were also stored there. But to these that particular night meant nothing. To Lindbergh's silvery steed it meant defiance of fate with death or glory at the end of the gesture.

He examined his plane with calm, careful, expert eyes. Perhaps he put an affectionate hand upon its side as a man might touch a horse about to undergo epochal strain, but if so, we didn't see him. His mind was not occupied by sentiment, but concentrated upon the weather reports, which Brice Goldsborough, the Pioneer Aircraft instrument specialist and navigator, who was his meteorological advisor, had waiting for him.

He went into the tiny store-room of the hangar where, sitting on a keg of nuts and bolts and mechanical miscellany, he studied the weather reports intently.

Presently, perhaps, the thought came to him that many hours were before him during which he would have no choice but to remain seated, unable to stretch those long

RECORD OF CAPTAIN LINDBERGH'S FLIGHT

Left San Diego, 3:55 p.m. Pacific time, May 10. Arrived St. Louis, 6:20 a.m., Pacific time, May 11.

Distance, 1,600 miles. Duration, 14 hours, 25 minutes.

Left St. Louis, 8:13 a.m., Central Standard time, May 12. Arrived New York, 3:33 p.m., Central Standard time, or 5:33, Daylight Saving time, May 12.

Distance, 900 miles. Duration, 7 hours, 20 minutes.

Total time in air across continent, 21 hours, 45 minutes, which is the fastest time ever made from coast to coast.

Left New York, 7:52 a.m., May 20. Arrived Paris, 10:21 p.m. May 21, Paris time, or 5:21 p.m. New York time.

Distance, 3,600 miles. Duration, 33 hours, 29 minutes, 30 seconds.

The average speed for entire flight was 108.18 m.p.h.

legs of his, for he rose, completing his checking of the weather data standing.

Lindbergh found these moments full of satisfaction. The reports revealed almost precisely such an atmospheric situation as he previously had declared would be ideal. The only unfavorable detail was the presence of fog off the Banks of Newfoundland which was likely to clear a little as the flight progressed:

"I'll go," he said.

Note that I don't put an exclamation point after the word "go." It was not an exclamation but as if he had remarked that he would cross the street. No watcher ignorant of the circumstances could have dreamed that the two words meant that he would dare alone nearly 3,000 miles of sea.

Quiet within the hangar but for the tunking of the rain on the tin roof. The showers were indicated as local and therefore troubled the young aviator not at all. But another detail had its disconcerting aspect—the field would be soft and muddy, complicating the take-off.

The plane was turned in the hangar and taken out tail first.

The Curtiss Field flood light fell upon the little ship and with the flares made high-lights bright as day, shadows very black.

Lindbergh in the littered stockroom waited for more weather reports.

The crowd went wild as the plane was moved out of the hangar—proof to them that he was to start. Police on roaring motorcycles fought to herd the crowd back from the area which had to be kept clear.

A strange crowd. Of course many in it were technically interested and informed, but the general public was there too. Cars by the hundreds had concentrated on this especial bit of ground, from New York, all parts of Long Island, everywhere. Among their passengers were people of all sorts. Gotham's night clubs were as fully represented as the air clan, for it was a thrilling entertainment, a great human episode, as well as a tremendous scientific moment. Small boys had haunted the field for days and nights. Long before one lad had confided to us his mother's decision that he could not come out that night. We understood the dreadful disappointment which would agonize his boyish heart if Lindbergh got away when his worshipful eyes were not at hand to see the sight. I telephoned him and his mother let him come, bringing this message for the Captain: "Our whole family is praying for you."

Underwood & Underwood

Captain Charles A. Lindbergh in the cabin of his plane.

No crowd ever gathered amidst circumstances more disheartening. The uneven surface of the field was dotted with a multitude of pools; some deep, some shallow. The buzz of conversation, the bursts of laughter, the sudden silences now and then were punctuated by the splashes of unfortunates. One heard little screams from women as they stepped into deep, over-slipper puddles.

But only murmurs of outer sounds crept into the hangar where the atmosphere was dank, damp, unpleasant. Stale gasoline. The grooms were working on the flying horse which Lindbergh was to ride that morning. The oil made a curious tunking sound as it was poured into the tank behind the engine. Not a word from Lindbergh. But he was not silent—while they filled the oil tank he walked up and down the hangar with his hands deep in his pockets, whistling cheerfully. It was as if the thing were commonplace.

Many strong hands were ready to raise the plane's tail onto a truck which backed into position. The tail skid was carefully secured. Lindbergh emerged from the gloom within the hangar to watch this process with that careful interest which characterized his scrutiny of every detail of procedure.

Lindbergh did not go with his plane. When the plane had been started toward Roosevelt Field, a mile away, he went back into the hangar to study a weather chart newly arrived from the office of the *New York Times.*

Having absorbed the message of this chart he went to a side door and cast a weather eye up at the sky. The rain poured steadily; the southeastern sky which he could see showed the grey advance light of a sullen dawn.

The men with the plane had their own troubles. The truck wheels cut deep into the saturated earth; now and then the vehicle bumped into ruts, the water splashing on the few permitted to participate in the procession. Stern, official arms outstretched and harsh authority forbade the curious crowd to follow.

Motor-cycles flanked each side of the strange almost funereal cortege. The little silvery "Spirit of St. Louis," dragged backward through the mud, seemed humiliated. It was rough treatment for an instrument designed to undertake in a few hours so tremendous an adventure.

The time came for the calm-eyed Lindbergh to follow the machine on which his life soon would depend. For the journey of the mile he had his choice between a Lincoln and a flivver. He chose the flivver. Lindbergh again. We followed in the Lincoln.

The dawn-grey lightened morosely.

A spectator watching the procession from a short distance saw the plane blend so perfectly into the grey sky that for many minutes he doubted if the machine was there. It took sharp eyes to make sure.

Now and then along the line of the procession a flashlight flared as some cameraman made one more picture for his paper. The balloons of smoke left by these explosions trended lazily away in dense formation which there was not wind enough to dissipate.

Presently the plane came to a halt and stood in bold relief upon a rise against the sky. There was a significance in this particular place, noteworthy to us. It had been the elevation from which the big Sikorsky had crashed as René Fonck had tried to take off last September. That tragic episode came to our minds but I know that Lindbergh was not thinking back toward last September and another man's disaster, but was thinking forward to the day after to-morrow and his own triumph.

Alongside Lindbergh's ship appeared the gasoline truck which had been held nearby in position several days. The

"Most Precious" says Lindbergh

"I was able only to carry very few things in my 'Spirit of St. Louis' but I took special care not to forget my faithful Waterman, which was most precious to mark the route on my maps."

CHARLES A. LINDBERGH
Paris, May 22, 1927

The above message, received from the young aviator, testifies to the value of Waterman's Fountain Pen under unusual and trying conditions. One more testimonial from a famous man to a famous writing tool!

Waterman's

barrel-shaped metallic drums were in the careful charge of Mr. B. F. Mahoney, president of the Ryan Airlines, Inc., which manufactured the "Spirit of St. Louis." The fuel from the drums was poured into 5-gallon milk cans by workers tremendously deliberate, like figures in a slow-motion picture.

P. & A. Photo.

Mahoney and Stumpf assisting Lindbergh into his flying togs.

Lindbergh!

Lindbergh's coolness during this to me slow torture again characterized his personality. Speaking to no one he sat in his car or stood beside the gas truck with his lips pursed as if he were whistling noiselessly. I stood six feet from him. There was no sound.

Immense care was exercised to prevent any dropping of the fuel into the cockpit and the fuselage where gas fumes later might have troubled the flyer.

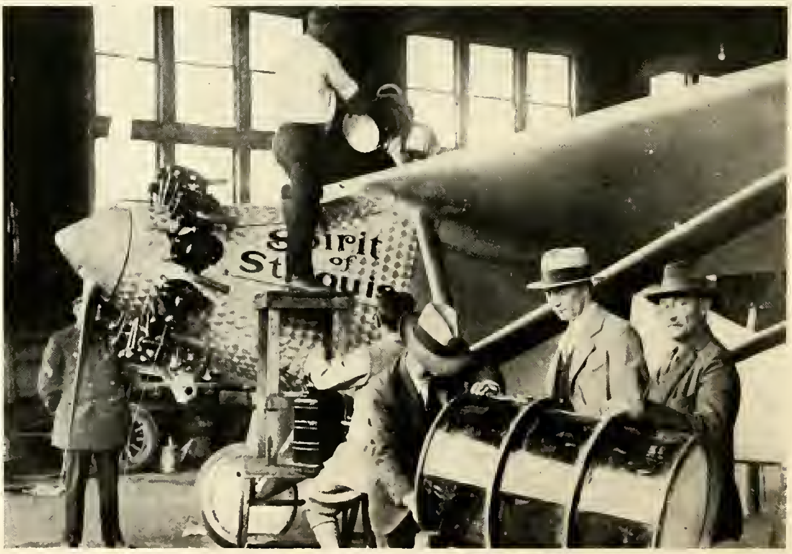
Why on this supreme mechanical occasion this archaic method of filling cans from the drums and then filling the plane's tanks from the cans when close at hand were highly perfected gas pumps? No flivver which brought out to the field that early morning the least important of the spectators had had its tank filled by so crude a method. Not only crude but cruel, because it held Lindbergh waiting for three dreary hours with what many thought was certain death ahead. Many of us were thinking: "If he had had these hours for sleep!"

Still Lindbergh was Lindbergh.

A man stepped out of the crowd, approaching him. His presence, at that particular moment was dramatic. With pleasant and fraternal courtesy Commander Byrd of the "America" asked his rival flyer if while he was fueling he would mind if the "America" made use of the runway in taking off for a trial flight.

"Not a bit," said Lindbergh, grinning.

Soon the "America" roared down the runway, passed the Lindbergh plane and headed away on its trial run. The rival plane sailed almost over Lindbergh's head.



Wide World Photo.

Filling the "Spirit of St. Louis" with Vacuum Mobiloil.

When the last gallon of gas had been poured into the tanks of the "Spirit of St. Louis" Lindbergh walked toward his ship, his hands deep in his pockets, his stride as free and unconcerned as if he had been going for breakfast.

His critical, minutely expert, but all-seeing gaze was like that of a man who saw that plane for the first time. The outside world did not exist for him. He was alone in the universe with his little silver airplane. Lindbergh's absorption in whatever at a particular moment he happens to be doing, always is complete.

Out of the sidelines rose a loud chorus from the photographers who wished for one more pose. They all called him "Slim." He didn't resent this, but it bored him. It was as if his calm, clear, thoughtful eyes said:

"All right, but hurry. I have something else to do." He had. He had to fly across the ocean.

The clicking of the cameramen's instruments was plainly audible. By this time the grey murk of the dawn had given place to the clear light of a grey morning.

The recording barograph was sealed, a customary preliminary to all flights where records are to be attempted.

Commander Byrd returned from his trial spin, and gave Lindbergh a fine greeting—one sportsman to another. "Good Luck to you, old man; see you in Paris." It came from Byrd's heart.

A close observer could not have failed to note frank and perfect admiration in the Commander's eye, as he looked at the stripling. Other celebrities came forward to bid Lindbergh Godspeed: Fokker, Bellanca, Chamberlain, Acosta, Noville and many others.

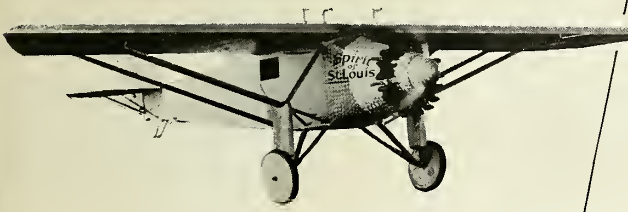
Now he stepped into his flying suit, with Mahoney acting as his valet.

There was a spatter of applause.

Lindbergh, the clean, with a bit of waste wiped from one hand a spot of oil.

The spatter of applause continued. Lindbergh turned to his plane as if to look for something in the cockpit, but really, I think, to hide embarrassment. The seclusion that the cockpit gave his face apparently was grateful for he held his head thus for a moment. Then he tacked his sheet of compass deviations to the instrument board for ready references.

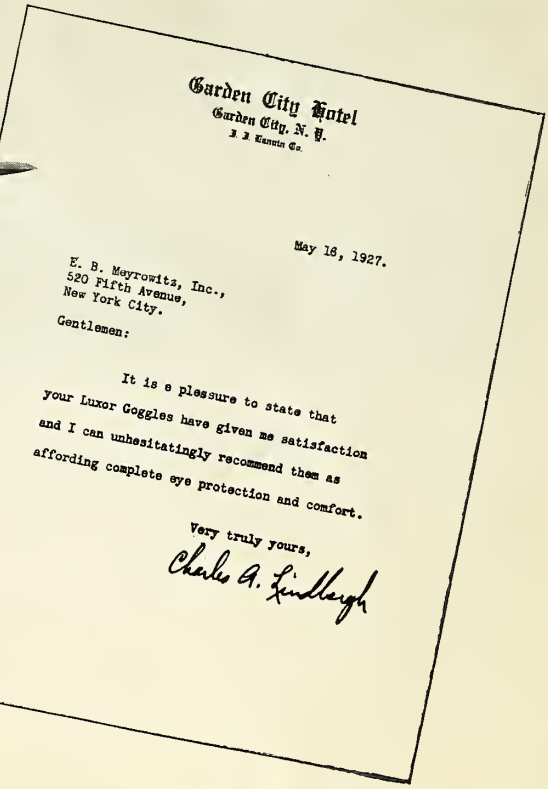
Workmen now grasped the "Spirit of St. Louis" by the tail and levelled her so that the gas would flow into the feed pipes ready for the tuning up. Her tail was lowered then as gingerly as if it had been charged with dynamite or made of glass. A mechanic climbed into the cockpit and tested the



Our hearty congratulations to

CAPTAIN CHARLES LINDBERGH

on his New York to Paris Flight



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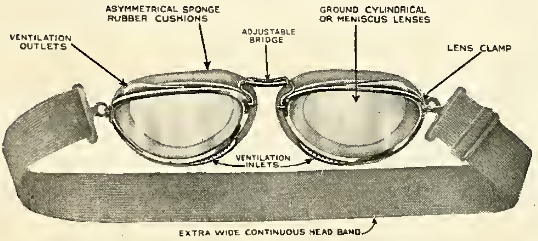
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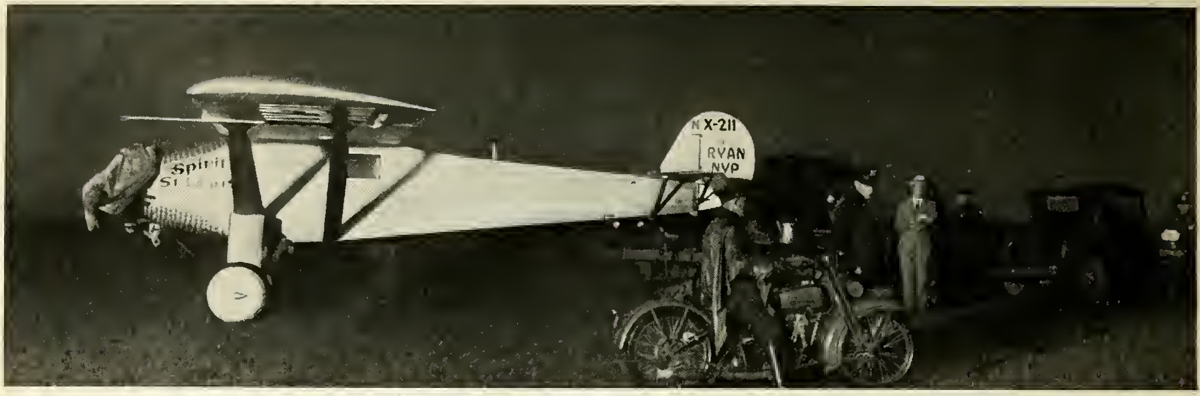


Waiting for daylight on May 20th—the historic date of Captain Lindbergh's take-off for Paris.

fuel control stop-cocks. A quarter-inch stream of gasoline ran from the pipe through the bottom of the plane, making a tiny pool upon the sodden ground. All okay!

The boy had won the love of everyone with whom he had come into close contact at the field. As Lindbergh prepared to climb into the cockpit Captain Skidmore of the Nassau County Police affectionately put his arm about his shoulders, saying:

"Even if you have to come back, kid, we'll give you a great reception."

Lindbergh grinned again and nodded. Then his long legs took him to and through the small door at the side of the cabin. He is not awkward. He is tall, but every movement of his limbs has a certainty of meaning. There is no waste in anything that Lindbergh does.

He took his place on the wicker seat which he would not leave again until he had swept across the sea. He tried out the controls; observers saw the ailerons upon the wing and the flippers and rudder of the airplane move slightly and attributed that to the pilot's nervousness. But the man who moved them showed no signs of nervousness.

He started the motor which barked and the barking gradually became a roar.

The police on their motorcycles dashed down the runway, their sirens sounding in awe-inspiring chorus as they cleared away the few who had encroached upon the muddy course.

On both sides spectators anxious to see the actual take-off ran along while Lindbergh was revving up the motor after "Spoons" Boedecker had whirled the blade which was to keep whirling over 3,600 miles of land and sea.

Lindbergh beckoned to Boedecker and Ed Mulligan, the engine experts in charge of his motor. They approached. He asked:

"How's she running? Everything all right?"

Boedecker later said: "I have tested a good many engines and always wished to say that they were running well, but this time I paused. A lump came in my throat and made it hard for me to say 'O. K.,' but the engine was running sweetly so I said it."

I looked through the side window of the cabin and never have I seen on a human face a look of such determination, of such almost divine courage.

"Well," Lindbergh shouted, with no violation of his usual calm, "Let's go."

Boedecker and his assistant pulled away the chocks and the plane stood trembling for a few seconds as the engine gathered speed.

That plane was alive. The personality of Lindbergh had thrust itself through every fibre. No one ever can tell me that the "Spirit of St. Louis" did not know as well as any of us that it was on its way to Paris!

At exactly 7:51 30 1/5 seconds by my stop watch, Friday morning, May 20, the plane began to move, rolling slowly along the runway and gradually gathering speed, the tail skid ploughing a deep rut through the mud. The three tracks left in the ground were evidence of the great weight which Lindbergh was attempting to carry through the air on this unprecedented journey.

The plane had run nearly 2,000 feet before Lindbergh apparently made any effort to put it into the air. Finally the machine left the ground. Ah-h-h!

But the plane only described a graceful arc and bounded back to the earth, to roll on for a short run before a second attempt. This also failed. Another gasp.

It now seemed to everyone as if it would be impossible to clear the telegraph wires just beyond the edge of the field. Beyond them were trees.

The distorting magic of the mist made the trees, really several hundred yards beyond the runway, seem close to it. They added their threat to that of the wires.

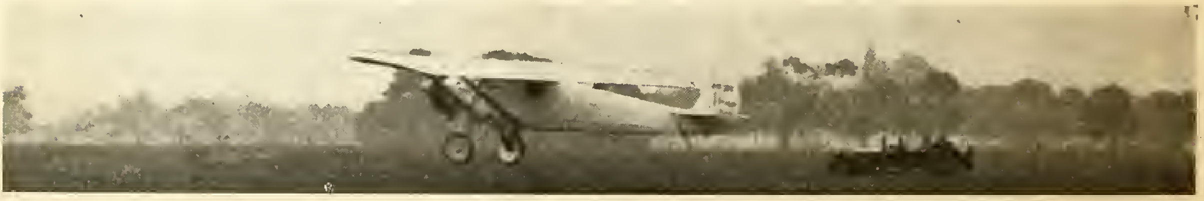
But . . . then——

When all hope seemed gone, with a final bound, the "Spirit of St. Louis" slowly. . . slowly . . . slowly rose into the air.

Actually off the ground to stay, Lindbergh levelled off to gain speed. A moment later, he climbed slowly and steadily to a safe altitude above the trees.

Lindbergh was off on the greatest flight in aviation's history.

The haze was thick. Almost immediately the daring venturer was lost to view.

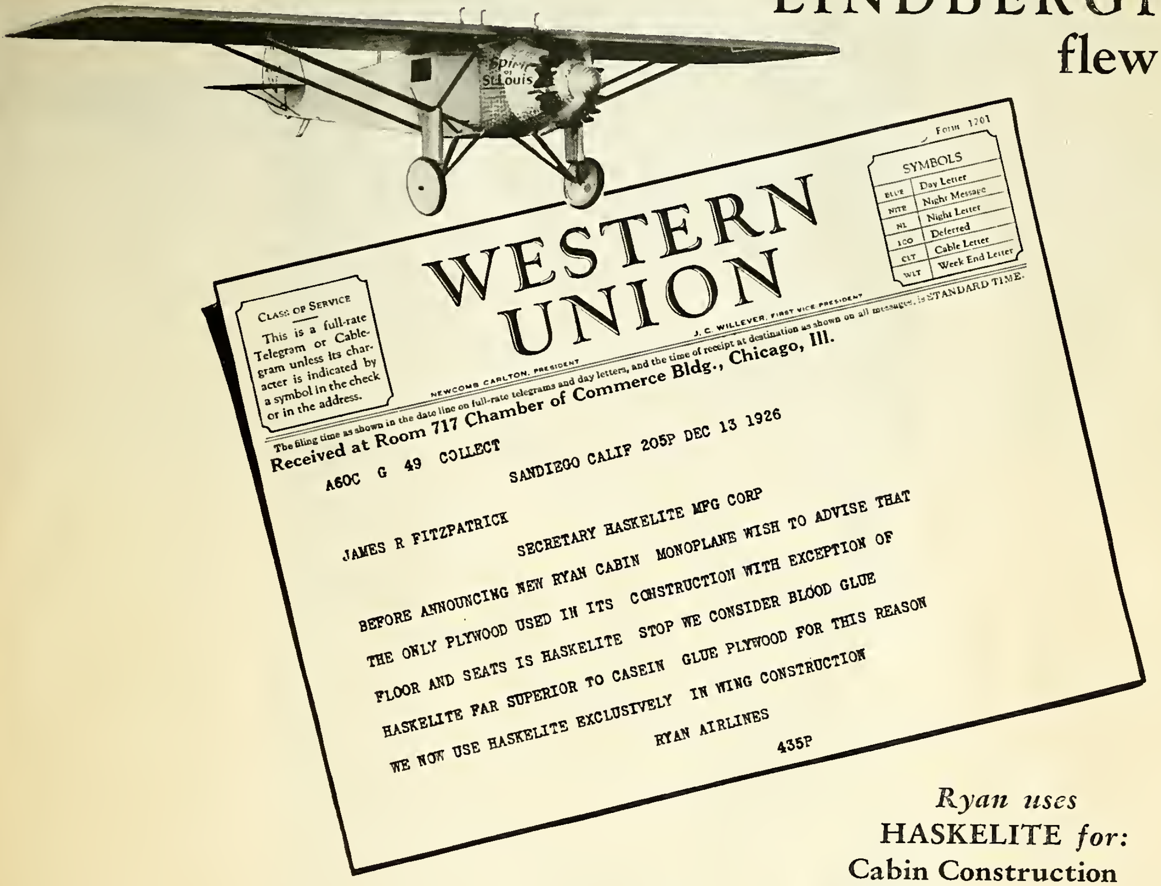


P. & A. Photo.

The actual take-off. Captain Lindbergh's plane just as it left the ground at Roosevelt Field, Long Island.

HASKELITE

in the ship that LINDBERGH flew!



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LCO	Deferred
CLT	Cable Letter
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From description of above plane in AERO DIGEST, May, 1926:

"The wing of the Ryan M-1 is moderately thick, of the non-tapering type. It is built in one unit of full span. Spars are of box type with special two-ply mahogany siding (HASKELITE). Ribs are built up of plywood, (HASKELITE), and spruce, and are of truss type. The leading edge of the wing is formed with mahogany plywood (HASKELITE) to give perfect wing curve form."

A stock Ryan monoplane was good enough for Capt. Lindbergh's record-breaking flight, because this builder, like almost every builder in the country (government and commercial), depends on HASKELITE for all important structural wood members. Over 85 per cent of the plywood used in aircraft is HASKELITE.

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from San Diego to New York to Paris

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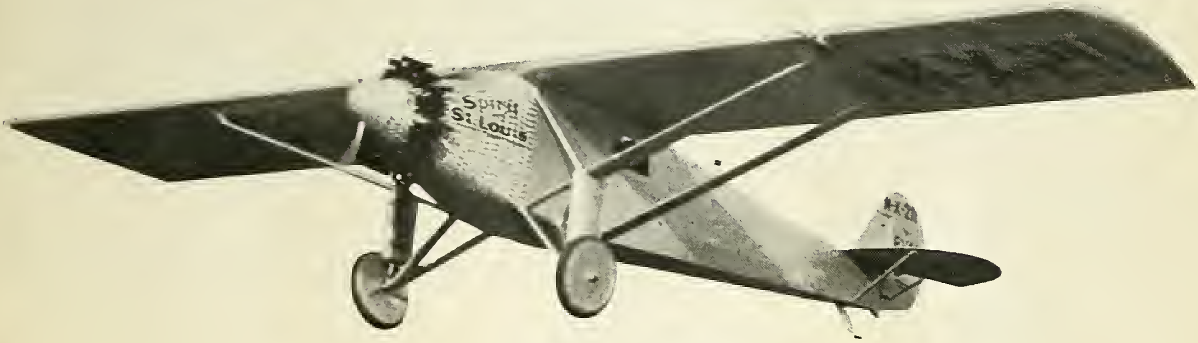

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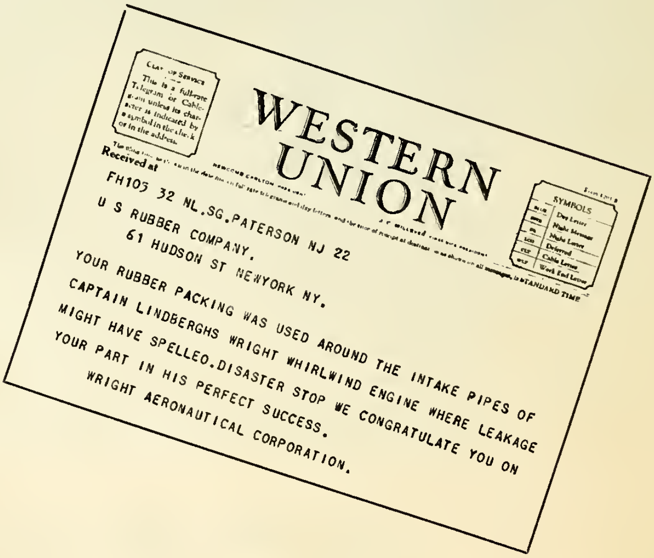

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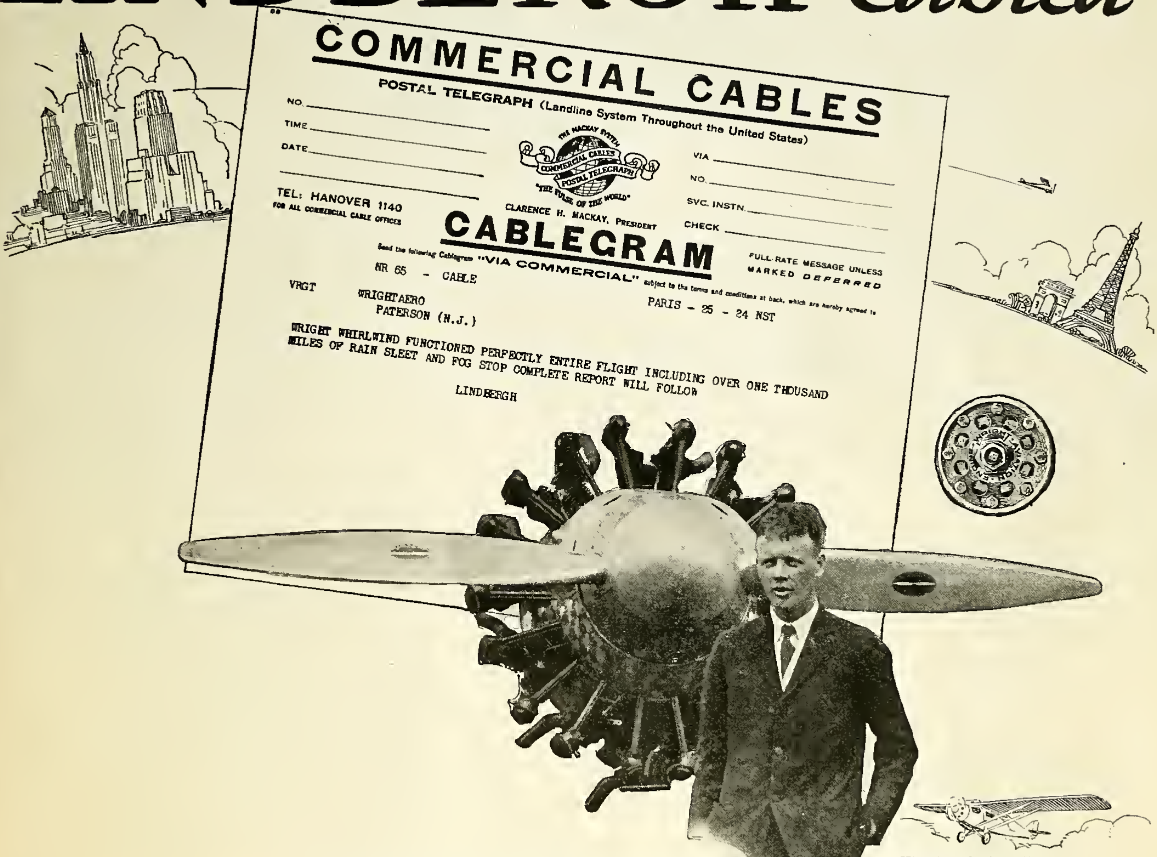

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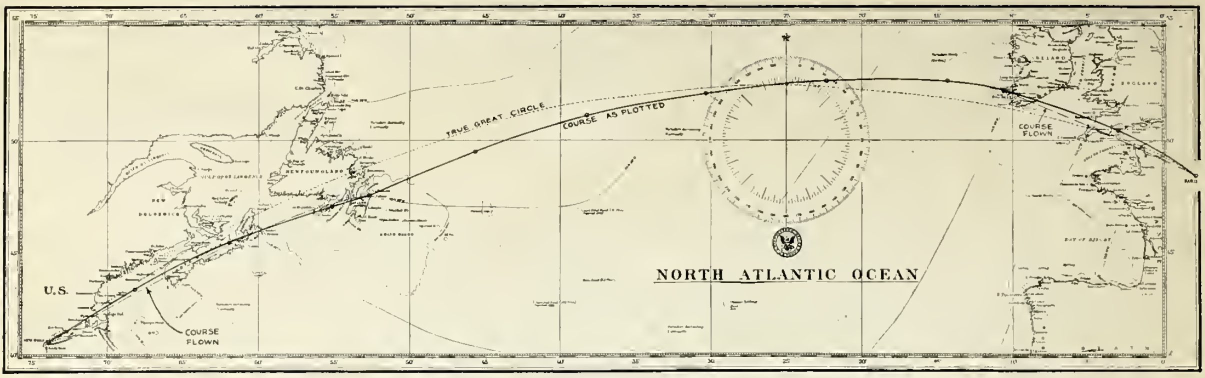

Map prepared by Brice Goldsborough showing route plotted and as flown by Captain Lindbergh (Hammond Map)

MY FLIGHT TO PARIS

By
Captain Charles A. Lindbergh

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WELL, here I am in the hands of American Ambassador Myron T. Herrick.

It isn't part of my plans to fly my plane back to the United States, although that doesn't mean I have finished my flying career. If I thought that was going to be the result of my flight across the Atlantic, you may be sure I would never have undertaken it.

There's one thing I wish to get straight about this flight. They call me "Lucky," but luck isn't enough. As a matter of fact, I had what I regarded and still regard as the best existing plane to make the flight from New York to Paris. I had what I regard as the best engine, and I was equipped with what were in the circumstances the best possible instruments for making such efforts. I hope I made good use of what I had.

That I landed with considerable gasoline left means that I had recalled the fact that so many flights had failed because of lack of fuel, and that was one mistake I tried to avoid.

All in all, I couldn't complain of the weather. It wasn't what was predicted. It was worse in some places and better in others. In fact, it was so bad once that for a moment there came over me the temptation to turn back. But then I figured it was probably just as bad behind me as in front of me, so I kept on toward Paris.

As you know, we (that's my ship and I) took off rather suddenly. We had a report somewhere around 4 o'clock in the afternoon before that the weather would be fine, so we thought we would try it.

We had been told we might expect good weather mostly during the whole of the way. But we struck fog and rain over the coast not far from the start. Actually, it was comparatively easy to get to Newfoundland, but real bad weather began just about dark, after leaving Newfoundland, and continued until about four hours after daybreak. We hadn't expected that at all, and it sort of took us by surprise, morally and physically. That was when I began to think about turning back.

Then sleet began, and, as all aviators know, in a sleet storm one may be forced down in a very few minutes. It got worse and worse. There, above and below me, and on both sides, was that driving storm. I made several detours trying to get out of it, but in vain. I flew as low as ten feet above the water and then mounted up to ten thousand feet. Along toward morning the storm eased off, and I came down to a comparatively low level.

I had seen one ship just before losing sight of Newfoundland, and I saw the glow of several others afterward through the mist and storm. During the day I saw no ships until near Ireland.

I had, as I said, no trouble before I hit the storm I referred to. We had taken off at 7:55 in the morning. The field was slightly damp and soft, so the take-off was longer than it would have been otherwise. I had no trouble getting over the houses and trees. I kept out of the way of every obstacle and was careful not to take any unnecessary chances. As soon as I cleared everything, the motor was throttled down to three-fourths and kept there during the whole flight, except when I tried to climb over the storm.

Soon after starting I was out of sight of land for 300 miles, from Cape Cod over the sea to Nova Scotia. The motor was acting perfectly and was carrying well the huge load of 451 gallons of gasoline and 20 gallons of oil, which gave my ship the greatest cruising radius of any plane of its type.

I passed over St. John's, N. F., purposely going out of my way a few miles to check up. I went right *(Continued on page 516)*

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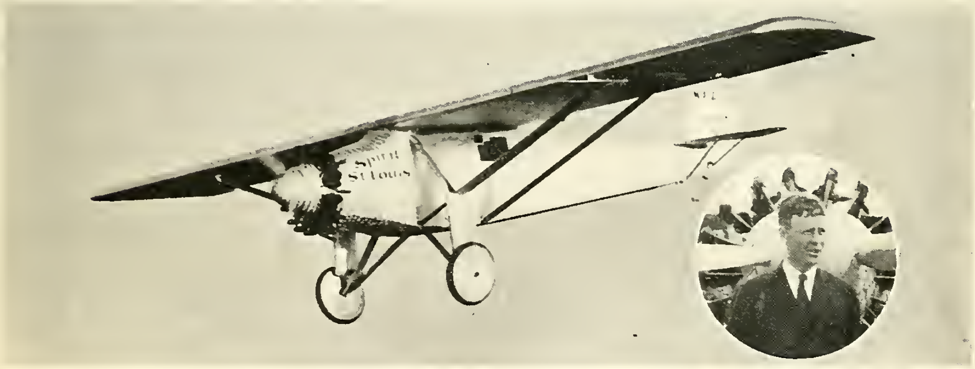

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through the narrow pass, going down so low that it could be definitely established where I was at that hour. That was the last place I saw before taking to the open sea.

I had made preparations before I started for a forced landing if it became necessary, but after I started I never thought much about the possibility of such a landing. I was ready for it, but I saw no use thinking about it, inasmuch as one place would have been about as good or as bad as another.

Despite the talk about my periscope, I had no trouble in regard to visibility. The view I had on both sides was quite good enough for navigating the ocean, and the purpose of the periscope was only to enable me to see any obstacle directly in front of me. The periscope was useful in starting from New York and landing in Paris. Other than that I used it very little. I kept a map in front of me and an instrument showing practically where I was all of the time.

Shortly after leaving Newfoundland I began to see icebergs. There was a low fog and even through it I could make out bergs clearly. It began to get very cold, but I was well prepared for cold. I had on ordinary flying clothing, but I was down in the cockpit, which protected me, and I never suffered from the weather.

Within an hour after leaving the coast it became dark. Then I struck clouds and decided to try to get over them. For a while I succeeded, at a height of 10,000 feet. I flew at this height until early morning. The engine was working beautifully and I was not sleepy at all. I felt just as if I was driving a motorcar over a smooth road, only it was easier.

Then it began to get light and the clouds got higher. I went under some and over others. There was sleet in all of those clouds and the sleet began to cling to the plane. That worried me a great deal and I debated whether I should keep on or go back. I decided I must not think any more about going back. I realized that it was henceforth only a question of getting there. It was too far to turn back.

The engine was working perfectly and that cheered me. I was going along a hundred miles an hour and I knew that if the motor kept on turning I would get there. After that I thought only about navigating, and then I thought that I wasn't so badly off after all.

It was true that the flight was thirty-three and a half hours long, and that at almost any moment in it a forced landing might be what you might call "rather interesting," but I remembered that the flying boys I knew back home spent some hours almost every week in bad flying when a forced landing would have been just as bad for them as a forced landing would have been for me. Those boys don't get credit for it, that's all, and without doubt in a few years many people will be taking just as many chances as I took.

The only real danger I had was at night. In the daytime I knew where I was going, but in the evening and at night it was largely a matter of guesswork. However, my instruments were so good that I never could get more than 200 miles off my course, and that was easy to correct, and I had enough extra gasoline to take care of a number of such deviations. All in all, the trip over the Atlantic, especially the latter half, was much better than I expected.

Laymen have made a great deal of the fact that I sailed without a navigator and without the ordinary stock of navigation instruments, but my real director was my earth inductor compass. I also had a magnetic compass, but it was the inductor compass which guided me so faithfully

ALL the honor for the great New York to Paris flight goes to Captain Lindbergh for his wonderful display of individual ability and courage.

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that I hit the Irish coast only three miles from the theoretic point that I might have hit if I had had a navigator. I replaced a navigator's weight by the inductor compass. This compass behaved so admirably that I am ashamed to hear any one talk about my luck. Maybe I am lucky, but all the same I knew at every moment where I was going. This inductor compass was so accurate that I really needed no other guide.

Fairly early in the afternoon I saw a fleet of fishing boats. On some of them I could see no one, but on one of them I saw some men and flew down, almost touching the craft, and yelled at them, asking if I was on the right road to Ireland.

They just stared. Maybe they didn't hear me. Maybe I didn't hear them. Or maybe they thought I was just a crazy fool.

An hour later I saw land. I have forgotten just what time it was. It must have been shortly before 4 o'clock. It was rocky land and all my study told me it was Ireland. And it was Ireland!

I slowed down and flew low enough to study the land and be sure of where I was; and, believe me, it was a beautiful sight. It was the most wonderful looking piece of natural scenery I have ever beheld.

After I had made up my mind that it was Ireland, the right place for me to strike rather than Spain or some other country, the rest was child's play. I had my course all marked out carefully from approximately the place where I hit the coast, and you know it is quite easy to fly over strange territory if you have good maps and your course prepared.

I flew quite low enough over Ireland to be seen, but apparently no great attention was paid to me. I also flew low over England, mounted a little over the Channel and then came down close to land when I passed a little west of Cherbourg. From Cherbourg I headed for the Seine and followed it upstream.

I noticed it gets dark much later over here than in New York and I was thankful for that. What especially pleased me was the ease with which I followed my course after hitting the coast of Ireland.

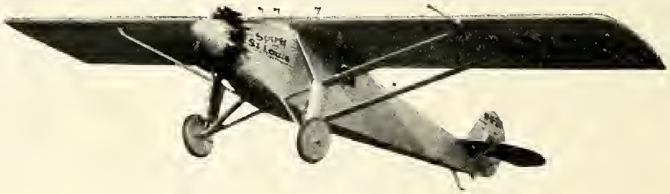
When I was about half an hour away from Paris I began to see rockets and Very lights sent up from the air field, and I knew I was all right.

I saw an immense vertical electric sign, which I made out to be the Eiffel Tower. I circled Paris once and immediately saw Le Bourget [the aviation field], although I didn't know at first what it was. I saw a lot of lights, but in the dark I couldn't make out any hangars. I sent Morse signals as I flew over the field, but no one appears to have heard them. The only mistake in all my calculations was that I thought Le Bourget was northeast rather than east of Paris.

Fearing for a moment that the field I had seen—remember I couldn't see the crowd—was some other airfield than Le Bourget, I flew back over Paris to the northwest, looking for Le Bourget. I was slightly confused by the fact that whereas in America when a ship is to land, beacons are put out when floodlights are turned on, at Le Bourget both beacons and floodlights were going at the same time.

I was anxious to land where I was being awaited. So when I didn't find another airfield, I flew back toward the first lights I had seen, and flying low I saw the lights of numberless automobiles. I decided that was the right place, and I landed.

I appreciated the reception which had been prepared for



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me, and had intended taxiing up to the front of the hangars, but no sooner had my plane touched ground than a human sea swept toward it. I saw there was danger of killing people with my propeller, and I quickly came to a stop.

That reception was the most dangerous part of the trip. Never in my life have I seen anything like that human sea. It isn't clear to me yet just what happened. Before I knew it I had been hoisted out of the cockpit, and one moment was on the shoulders of some men and the next moment on the ground.

It seemed to be even more dangerous for my plane than for me. I saw one man tear away the switch and another took something out of the cockpit. Then, when they started cutting pieces of cloth from the wings, I struggled to get back to the plane, but it was impossible.

A brave man with good intentions tried to clear a way for me with a club. Swinging a club back, he caught me on the back of the head.

It isn't true that I was exhausted. I was tired, but I wasn't exhausted. Several French officers asked me to come away with them and I went, casting anxious glances at my ship.

But I must remember that crowd did welcome me. Good Lord! There must have been a million of them. Other men will fly the Atlantic as I did, but I think it safe to guess that none of them will get any warmer reception than I got.

Finally I got to Ambassador Herrick's house and I have certainly been all right since then.

I am convinced that it is much easier to fly from America to Europe than to fly from Europe to America. The air drift is from west to east, and the prevailing wind, when the weather is good, is from the southwest or northwest. If the wind is from the east, favoring flight from Europe, then the weather is likely to be bad.

During my flight I was helped enormously by the fact that I had a tail wind for fully a third of the way, especially the last part. It put me right ahead of my time schedule. I expected to make the trip in thirty-six hours.

About my trip, there wasn't any of that casual unpreparedness which some people seem to think there was. I had everything of the very best, and every care was taken in the preparation of the trip.

If I have been lucky, it was because I got fitted out with a perfect ship, equipped by men who took every care and precaution. Nothing was overlooked, and from the first we never had any trouble or setback. I had the pick of everything in the way of equipment.

For a flight of the kind I planned, my monoplane was undoubtedly the best ship. For regular transatlantic service, of course, something heavier, with multiple motors, will have to be developed, and I am very interested to see what will be the result of the Fokker trip with a tri-motor plane. I am sure they will get over.

The sleet which I met with might, if it had been heavier, have ended my trip very soon after I left Newfoundland, for it takes very little to force a plane down. If I had known I was to encounter sleet, I might never have started when I did. It was fortunate for me that I was able to rise above it most of the time, and I never was happier about anything than when the temperature rose and I got out of that danger.

To my mind, proper meteorological observation and reports about conditions over the Atlantic are the first essentials in any development of transatlantic flying. These re-

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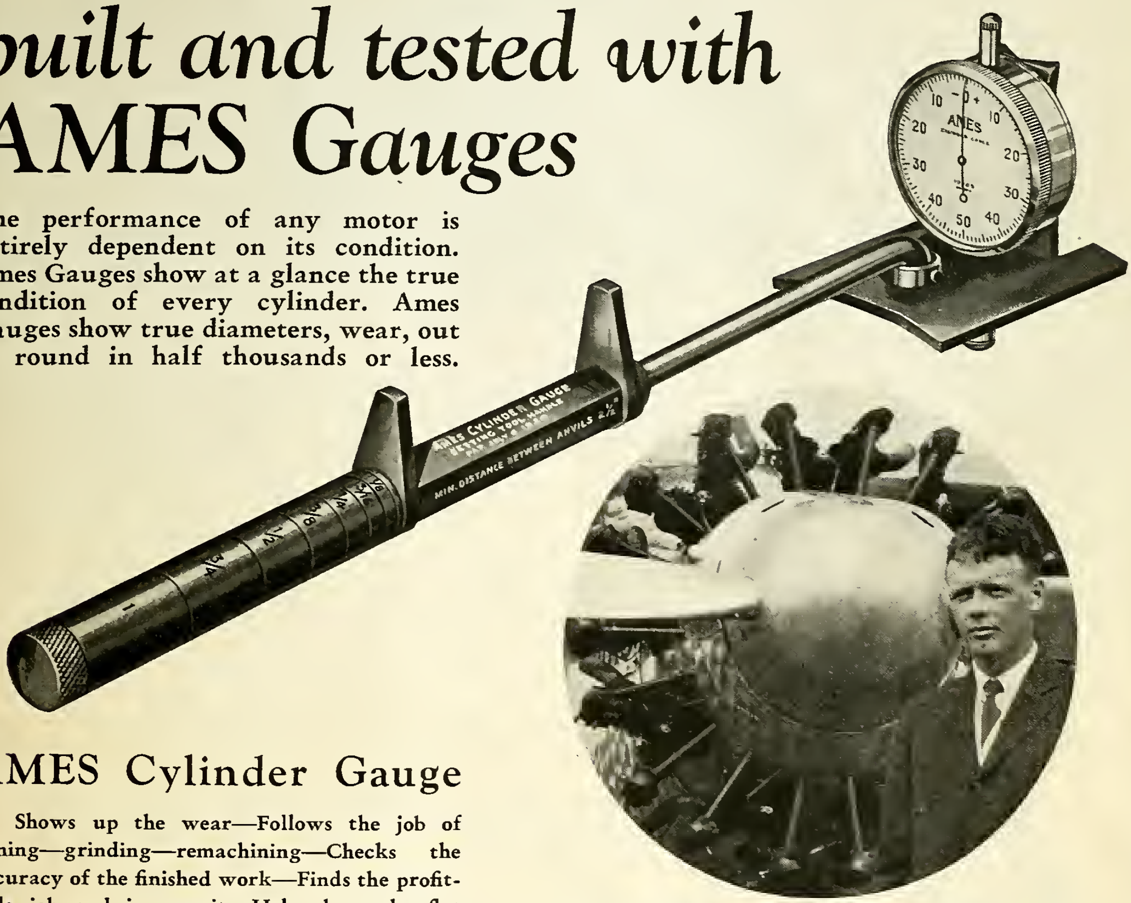

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ports can be obtained only by having regular water stations along the ocean route, with full meteorological and all other kinds of equipment, to give advice and help to airmen.

That will come, I feel sure. Though my monoplane is the first to make the trip from New York to Paris, it is going to have many successors. Regular service, however, can only be done with multimotor planes, so that if one motor stops the plane can return. You can't expect passengers to trust themselves to a single-motored ship.

My machine, from a pilot's point of view, had the great advantage that the cabin was practically enclosed and I was well sheltered. I think that if I had been exposed to wind and sleet I would have been far more tired than I was. I see that some airmen who have looked at my ship think I must have been very uncomfortable.

Perhaps the seat looks more uncomfortable than it is. Actually, I was perfectly at my ease, except, of course, that I had to sit in the same position so long. But when one is busy with a problem and working, one never thinks much about that. I scarcely remember now if I ever thought about discomfort at all. My seat was really far more comfortable than one usually finds in a theatre or a classroom, and I didn't feel in any way cramped or strained.

With regard to eating and drinking I had fairly much the same disregard for physical sensations. I took two or three drinks of water from a big supply I had, but never much at a time. I never drink alcohol at all, and I never felt really thirsty until I landed. Then I wanted to drink a lot, and I kept on drinking milk and water all that evening after I got to the American Embassy.

Of my sandwiches I ate only one and a half, and I cannot remember now in the least what they tasted like. All airmen know quite well how indifferent one is to meal times and physical needs when one concentrates on getting anywhere. My compass kept my interest all the way. I couldn't do more than attend to it and watch the weather.

I brought a sealed barograph with me, which will tell an interesting story of the heights at which I flew. I can see through the glass cover one very high peak where I must have gone fully 10,000 feet, though just before, I had been close down on the water. The climbing power of the plane, even while I still had a heavy load of gasoline, was one of the factors which made success possible. If my ship hadn't been able to climb as she did, the sleet would have proved far more troublesome and dangerous.

In the five years I have been flying I have made 7,190 flights, totaling 1,823 hours 40 minutes on a conservative estimate. That thirty-three hours' single flight was only a small part of the total. Last year I flew 763 hours. In all, I have carried 5,951 passengers, and I am glad to say I have never had an accident either to any one of them or to myself. I wasn't, in that way, entirely unprepared for the flight I made.

There were things I saw I cannot find words to describe. For instance, I saw my first iceberg. There must have been fifteen of them, all in all, eastward from Newfoundland. Between Nova Scotia and Newfoundland, I saw ice fields but no icebergs. After Newfoundland, I saw icebergs but no ice fields. Some big bergs were very beautiful and looked enormous, even from the height at which I was flying.

Another moment which gave me a great thrill was during the night, when traveling above the clouds. From that time until the moon rose was the most uncomfortable part of my journey. It got very dark and only the brightest stars shone through the haze. I could see the North Star,

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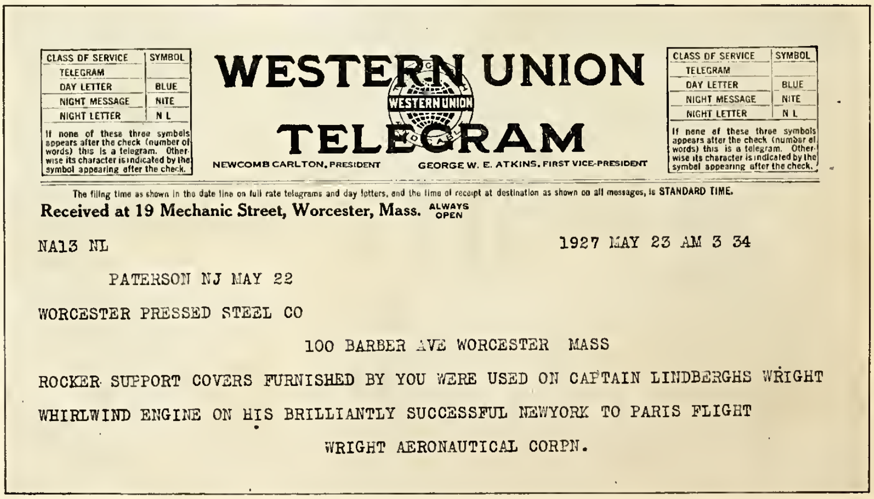

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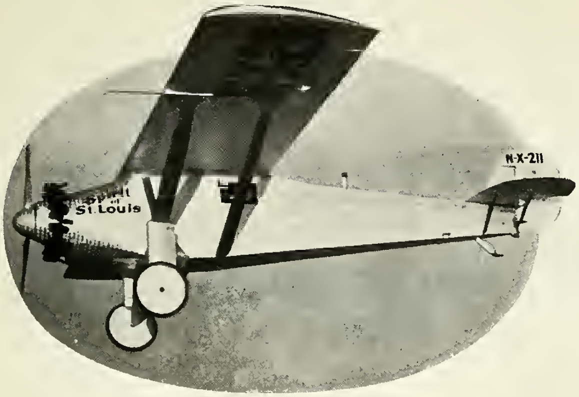

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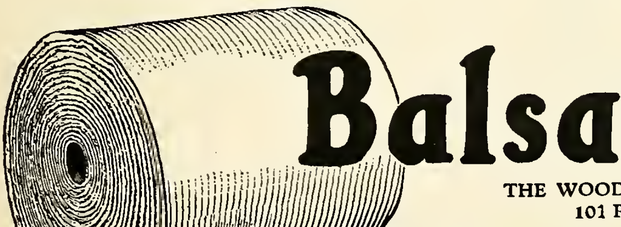

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and that was a great aid in giving me a general kind of assurance of direction.

But I was glad when the moon came up above the clouds. It is dreary flying without any light at all, and when I planned the flight I wanted to have the moon with me. She was already past the full but bright and comforting. And those who have never flown above the clouds in moonlight haven't seen one of the most lovely things the world has to show. It is fairyland up there, and an especially comforting fairyland to a human when he knows that down below the clouds there is fog and sleet or rain and he is flying through a clear sky.

I have just unpacked the emergency outfit that I took with me, and it was rather melancholy business to think that I had the same idea as the Frenchman, Coli, and took a fishing line and a couple of hooks with me in case I landed in the sea and had to fish for a living.

Another thing I took was a needle and thread. That may sound foolish, but in case I came down I had planned to make a kite with the canvas of the wings. I had a good stout knife to cut the crosspiece and a ball of string on the chance that some ship might have seen me flying my kite in the middle of the Atlantic.

I had also four lifeboat flares in bicycle tubing to set off in the night if I heard the sound of ship's engine or saw her lights.

These things were little enough to use to attract attention if I had had to come down. I realized that on my flight as hour after hour I saw no ship or any sign of life on the big sea.

The only companions I had were the birds. I would like to know just how far they fly from land and what they live on. Some of these big seagulls must cross the Atlantic almost as quickly as I did. I found them about what seems to me nearly half way across, flying around, and saw them settle on the water. I never knew before that a bird could fly such a distance and find food out in the middle of the ocean. There can't be much to eat where the water is very deep, though I suppose in the Gulf Stream there are weeds and perhaps fish near the surface.

About a hundred miles off the coast of Ireland I saw some porpoises, but except birds, that was all I saw. I had been hoping for a whale, for I had never seen one, but perhaps some other time I shall.

One of the questions the French airmen have been asking me is how often I changed the angle of my compass on the way from Newfoundland until I sighted Ireland. That is what has interested them most in examining the way in which I navigated. Actually I changed the point about every hundred miles. My flight across the ocean was not a straight line, as some thought, and I found that my calculations were almost exactly right.

Another of the questions they put to me is how I calculated the drift of the airplane. In that I was fortunate because there was never at any time a strong side wind blowing. When the wind was highest it was directly behind me. Now and then I took an observation of the way the waves were running, especially the whitecaps, and though this manner of observing is only very approximate it served my purpose very well.

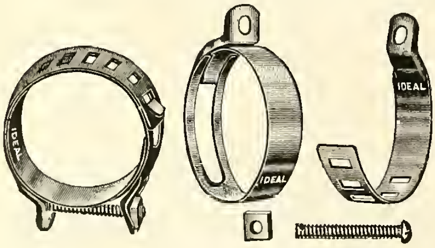
The more I think about the way my ship made the trip the more delighted I am at the degree of progress that she shows in solving the problem of long-distance flying.

LINDBERGH'S "Spirit of St. Louis"

uses exclusively

IDEAL HOSE CLAMPS

"The clamps which prevent leaks under all circumstances"



The best proof of their merit:
The two planes which accomplished successful trans-Atlantic flights are equipped with
IDEAL HOSE CLAMPS

1919	*Com. Reade and Lt. Walter Hinton*
1927	*Capt. Charles A. Lindbergh*

Write for particulars

IDEAL CLAMP MFG. CO., INC.
200 Bradford Street
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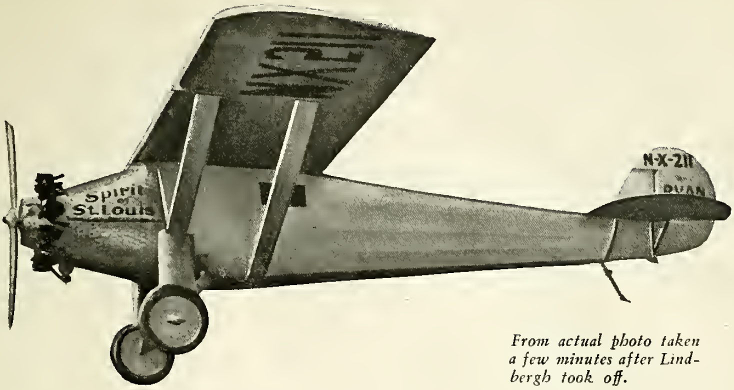


From actual photo taken a few minutes after Lindbergh took off.

LINDBERGH Lands in Paris on Goodrich Silvertowns

SILVERTOWNS across the sea! Landing on the dependable resilience of Silvertown Airplane Tires, Capt. Charles E. Lindbergh in his Ryan monoplane "Spirit of St. Louis" won his fight with death and distance. The stalwart cushioning of Silvertowns absorbed the landing shock of the first airship to fly from New York to Paris without a stop.

Silvertowns started Lindbergh safely on his way past the dangerous, critical seconds of the take-off at New York.

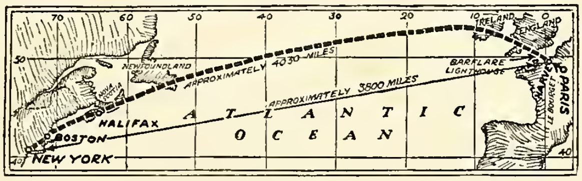
Silvertowns delivered him safe at Paris—safe from the fateful impact as his eagle plane swooped from the sky, and slammed its wheels down on Europe.

The first thirty seconds of the flight—the last thirty seconds of it!

The first 1,000 feet on the ground after Lindbergh cried "Okay" and they jerked the chuck blocks away from the Silvertown-shod wheels! The last 1,000 feet as the great monoplane hurtled across the Paris landing field.

These were seconds of held breath and tense nerves. Would the tires stand up as the 5,150 pounds of the loaded plane hammered and battered them along the runway? Would they hold the 46-foot wingspread of the eagle ship true to the course?

Would a tire fail in those seconds of grave stress? A blowout spelled the end of the magnificent venture, perhaps with a still greater adventure for the man in the cockpit.



The B. F. Goodrich Rubber Company, Akron, Ohio.

Less than a minute of time, yet an eternity of suspense, the overseas plane thundered along the gauntlet of disaster.

Silvertowns held! Their sinewy strength, their sturdy cushioning stood the stress and strain that had doomed a thousand flights. Capt. Lindbergh soared away safe and landed safe.

Silvertowns met the test as they met it when this unheralded challenger, Capt. Lindbergh, started on his flight from San Diego to New York and made it in less than twenty-three hours.

The dash through the clouds to Paris was a matter of gasoline, courage of the intrepid voyager of the skies—and Silvertown tires in the taking off over here and the landing over there.

The "Spirit of St. Louis" sped overseas a perfectly equipped airplane, instruments and parts the nearest to perfection ever assembled.

Captain Charles Lindbergh built it quietly at San Diego, counting on its mechanical perfection as well as his skill and courage to carry through to the goal.

And when it came to tires he fortified the security of his plane with Silvertowns. He underwrote the safety of his venture with the tires that have through years met the test of great moments of competition.

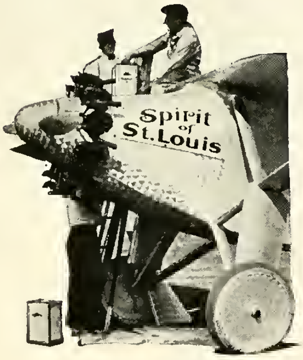
He called to his aid the same flexing strength, the same dependable endurance with which Goodrich Silvertowns have for years served the motor cars of the world.

Goodrich Silvertowns

BEST IN THE LONG RUN

Mobiloil flies

3700-mile flight gives lubrication



Filling up the plane with Mobiloil "B"

A 25-YEAR old aviator, flying alone, has literally set the world afire. New York waited breathless for word from Capt. Charles Lindbergh while Paris prepared to give him a frenzied welcome. Cities, towns and hamlets on both sides of the Atlantic went wild with rejoicing when the word was flashed, "He's in Paris."

In 33½ hours, Capt. Lindbergh flew over 3700 miles, a few days after he completed a record-breaking flight from San Diego to New York.

In this spectacular flight, as in other outstanding air events, lubrication played its important role. There could be no mistake. The single Wright Whirlwind engine in the Ryan plane must function perfectly.

And it did.

In a press interview shortly after his arrival in Paris, Lindbergh said, "We had the worst possible weather for over 1000 miles over the open sea. I cannot say too much for the way the ship and the motor stood up under all this punishment."

Capt. Lindbergh placed his entire lubrication problem in the hands of the Gargoyle Mobiloil Engineers. Mobiloil "B" was prescribed.

VACUUM OIL COMPANY

Other branches and distributing

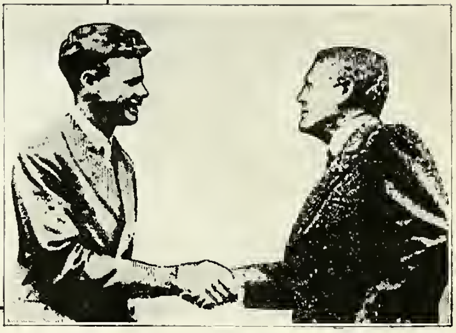
CABLEGRAM

Vacuum Oil Company
New York

In my flight from New York to Paris my engine was lubricated with Gargoyle Mobiloil "B" and I am happy to say that it gave me every satisfaction. My engine functioned perfectly.

Charles A. Lindbergh

Captain Charles Lindbergh



Paris, France—Capt. Lindbergh congratulated by Myron T. Herrick, U. S. Ambassador to France. This photo, taken in Paris May 22nd, was carried to London by airplane and sent to New York by radio for the Vacuum Oil Company.

with Lindbergh

its greatest test in history

The oil used was not a special oil. It was the same Gargoyle Mobiloil "B" that is used by aviators in all parts of the world.

The Mobiloil Engineers keep in close touch with all aeronautical developments.

The majority of airplane builders use Mobiloil for test and development work. Mobiloil is chosen again and again for difficult and hazardous flying.

In your plane Mobiloil will give trouble-free lubrication just as it did in Capt. Lindbergh's plane. And Mobiloil dealers are nearby wherever you land.

When Commander Byrd flew to the North Pole—he used Mobiloil "B."

When the U. S. Army fliers circumnavigated the globe—they used Mobiloil "B."

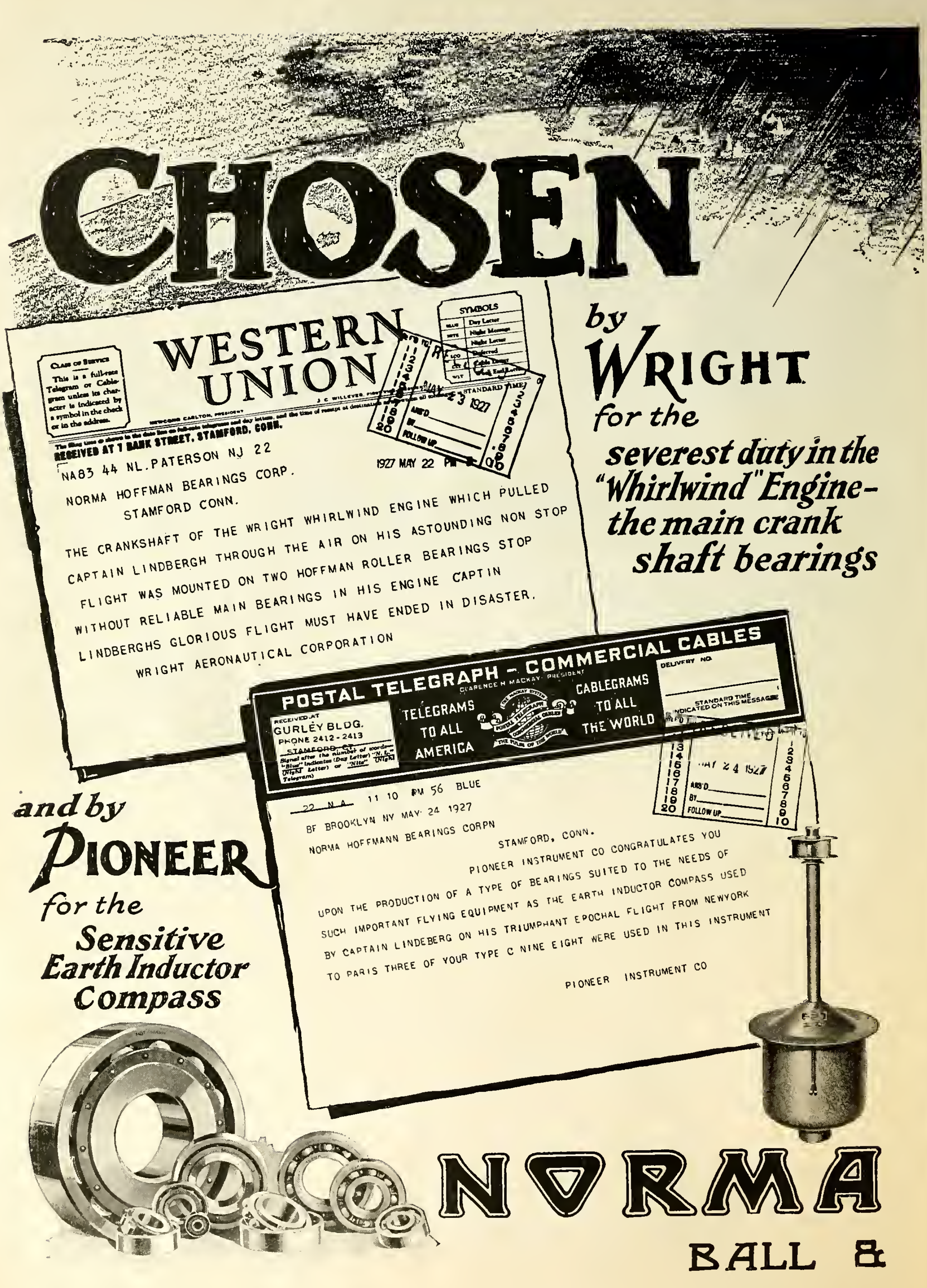
When Lieutenant Maughan in 1924 flew across the United States "from dawn-to-dusk"—he used Mobiloil "B."

When Capt. Lindbergh flew from San Diego to New York—he used Mobiloil "B."

And now—Capt. Lindbergh has flown from New York to Paris—with Mobiloil "B" in his engine.

GARGOYLE
Mobiloil

MAIN BRANCHES: *New York, Chicago, Philadelphia, Boston, Buffalo, Detroit, Pittsburgh, Minneapolis, St. Louis, Kansas City, Dallas*
warehouses throughout the country



CHOSEN

by WRIGHT for the *severest duty in the "Whirlwind" Engine—the main crank shaft bearings*

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BLUE Day Letter
NITE Night Message
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NORMA HOFFMAN BEARINGS CORP.
STAMFORD CONN.

THE CRANKSHAFT OF THE WRIGHT WHIRLWIND ENGINE WHICH PULLED CAPTAIN LINDBERGH THROUGH THE AIR ON HIS ASTOUNDING NON STOP FLIGHT WAS MOUNTED ON TWO HOFFMAN ROLLER BEARINGS STOP WITHOUT RELIABLE MAIN BEARINGS IN HIS ENGINE CAPTIN LINDBERGHS GLORIOUS FLIGHT MUST HAVE ENDED IN DISASTER.

WRIGHT AERONAUTICAL CORPORATION

and by PIONEER for the *Sensitive Earth Inductor Compass*

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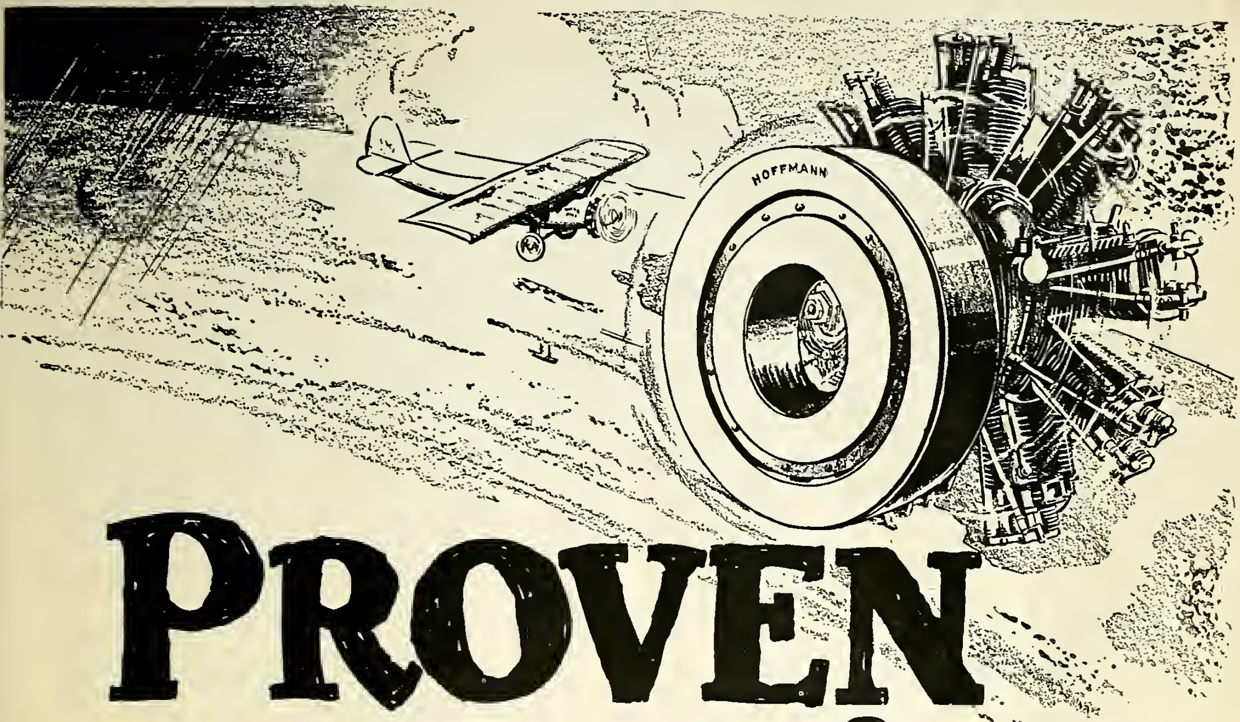
NORMA HOFFMANN BEARINGS CORPN
STAMFORD, CONN.

PIONEER INSTRUMENT CO CONGRATULATES YOU UPON THE PRODUCTION OF A TYPE OF BEARINGS SUITED TO THE NEEDS OF SUCH IMPORTANT FLYING EQUIPMENT AS THE EARTH INDUCTOR COMPASS USED BY CAPTAIN LINDEBERG ON HIS TRIUMPHANT EPOCHAL FLIGHT FROM NEWYORK TO PARIS THREE OF YOUR TYPE C NINE EIGHT WERE USED IN THIS INSTRUMENT

PIONEER INSTRUMENT CO

NORMA

BALL &



PROVEN *in Service*

On the San Diego-New York-Paris Flight

by Capt. Charles Lindbergh

AGAIN the endurance and dependability of Norma-Hoffmann Precision Bearings have been demonstrated in this epoch-making trans-Atlantic flight—as they were in the record-breaking 51-hour non-stop flight of the Bellanca plane

NORMA-HOFFMANN BEARINGS CORP'N
STAMFORD, CONN., U. S. A.

NORMA-HOFFMANN

ROLLER BEARINGS

The "Spirit of St. Louis" being guarded from the crowds on arrival at Le Bourget and later in the protection of the hangar. © Wide World.

LINDBERGH WELCOMED IN EUROPE

"I AM Charles Lindbergh," said the greatest hero the aviation world has ever known, as he brought his silvery monoplane, the "Spirit of St. Louis" to a perfect landing at Le Bourget airport, at 10:21, Paris time, on the night of May 21st.

A modest statement, made with the thought that he might not be known to the huge crowd of men and women who rushed across the landing field to greet him, crying "Vive Lindbergh."

All France, all America—the whole world thrilled at the epochal accomplishment of a successful flight from New York to Paris by a lone aviator. Never has anyone received a greater or more spontaneous welcome from the hearts of the people than did Captain Lindbergh. His supreme daring in tackling the job alone, his simple and unassuming manner have won the affection of the entire world.

To the United States Embassy the cheering throngs escorted the young pioneer, and it was there that he stayed during a strenuous week of receptions, fêtes and dinners.

His first call was on Mme. Nungesser, mother of the French ace who two weeks before had attempted a western crossing of the Atlantic that ended in what no one yet knows.

In a shorter space of time than ever before, France bestowed upon Captain Lindbergh her highest honor—the Cross of the Legion of Honor. The Aero Club of France presented him with its gold medal. The King of Belgium pinned the emblem of Chevalier of the Royal Order of Leopold on the aviator's coat, and the Medaille d'Or, as well as the coveted Belgian Aviator Medal were bestowed by the Belgian Aero Club. The New York State Medal for Valor was conferred upon him by Governor Smith, and when he returns to America he will be presented with the Distinguished Flying Cross by President Coolidge.

Louis Bleriot, who was the first to fly across the English Channel in 1910, presented Captain Lindbergh with a fragment of the propeller of the monoplane in which he crossed the Channel, and praised his feat in laudatory terms.

In response the Captain said: "That which I have done, my dear Monsieur Bleriot, isn't comparable to that which you did. For me you will always remain my master."

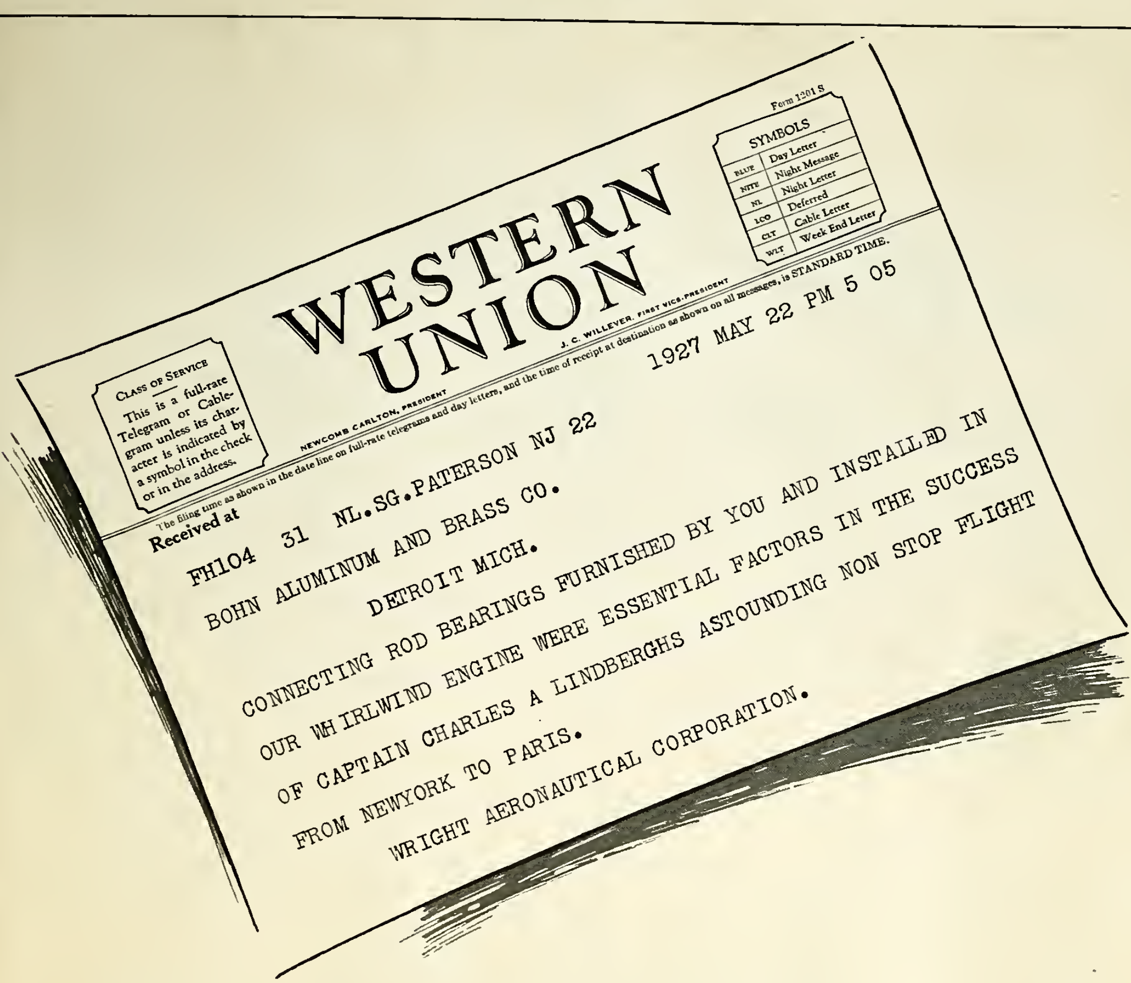
Captain Lindbergh's modest demeanor throughout this unprecedented round of ovations has endeared him to all of Europe. His spontaneous diplomacy has won for him as much admiration as his great air exploit.

Raymond Orteig, donor on the (Cont. on page 552)

P. & A. Photo.

Captain Lindbergh, wearing the Cross of the Legion of Honor, President Doumergue and Ambassador Herrick.

Captain Lindbergh at the American Embassy. Our two Ambassadors in France. *Acme.*



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NEWCOMB CARLTON, PRESIDENT
J. C. WILLEVER, FIRST VICE-PRESIDENT

Form 1201 S

SYMBOLS

BLUE	Day Letter
NITE	Night Message
NL	Night Letter
LCO	Deferred
CLT	Cable Letter
WLT	Week End Letter

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BOHN ALUMINUM AND BRASS CO.
DETROIT MICH.
CONNECTING ROD BEARINGS FURNISHED BY YOU AND INSTALLED IN
OUR WHIRLWIND ENGINE WERE ESSENTIAL FACTORS IN THE SUCCESS
OF CAPTAIN CHARLES A LINDBERGHS ASTOUNDING NON STOP FLIGHT
FROM NEWYORK TO PARIS.
WRIGHT AERONAUTICAL CORPORATION.

"The Spirit of St. Louis"

Piloted by

Captain Charles A. Lindbergh

on his epoch-making Trans-Atlantic trip
was equipped with

BOHN RING TRUE BEARINGS

BOHN ALUMINUM & BRASS CORPORATION
EAST GRAND BOULEVARD. DETROIT

Rajah

offers its heartiest congratulations to

Capt. Lindbergh

on his epochal flight—a new milestone in the world's history of courage and skill combined with mechanical efficiency.

Capt. Lindbergh's Wright Whirlwind motor was equipped with

Rajah

Lock Clip Terminals

the tremendously important "little things" which did their work perfectly and insured continuous engine ignition.

Same as furnished to airplane manufacturers, aviators and U. S. Government

Manufactured exclusively by

The Rajah Company

Bloomfield, New Jersey

Oldest manufacturers in America of high grade spark plugs, terminals and other motor ignition equipment.

Our warmest congratulations to Captain Charles Lindbergh!

* * *

The Spirit of St. Louis in which he flew from New York to Paris was built with AIRPLANE SPRUCE supplied by us.

We supply many of the largest aircraft manufacturers in the United States and Europe.

Rough Green – Kiln Dried Rough – Air Dried or Finished to your sizes. Prompt shipments in carloads and less than carloads.

* * *

J. V. G. POSEY & COMPANY
LUMBER MERCHANTS

NORTHWESTERN BANK BUILDING
PORTLAND, OREGON

Specialists in Sitka Spruce for Twenty-five Years

CAPTAIN
LINDBERGH

we salute you - - -

We cherish the proud privilege of honoring you for another triumph truly American in spirit and accomplishment.

SPLITDORF ELECTRICAL CO.
NEWARK, N. J.
Subsidiary of Splitdorf-Bethlehem Electrical Company

TRADE
SPLITDORF
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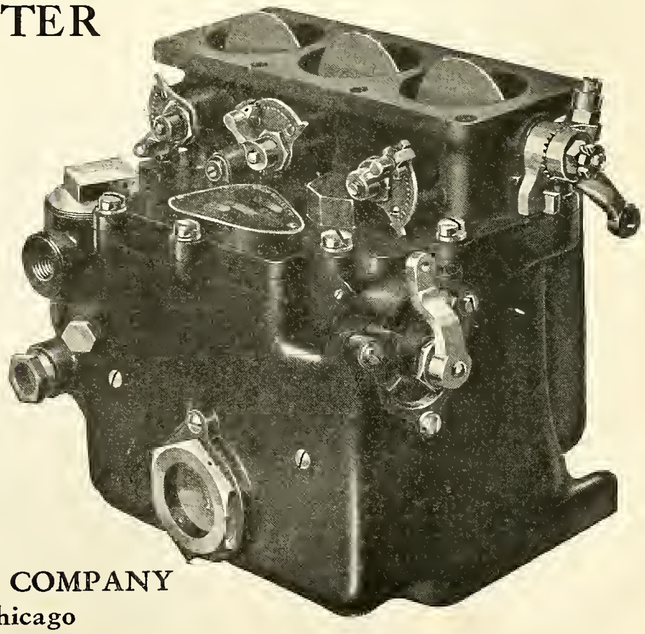
Reg. U.S. Pat. Off.
Established 1858

STROMBERG

AIR — LAND and WATER



It Is Significant

That Commander Byrd had Stromberg Carburetors on the three Wright Whirlwind Engines in his flight over the North Pole!

That Chamberlin and Acosta had them on their Wright Whirlwind for their world's endurance record, and

Last But Not Least—

Captain Lindbergh had the same equipment for his dashing flight from New York to Paris.

STROMBERG MOTOR DEVICES COMPANY
58-68 East 25th St., Chicago

Direct Factory Branches: 517 W. 57th St., New York City 760 Commonwealth Ave., Boston 84-86 Hancock Ave., W., Detroit 1529 Laurel Ave., Minneapolis 1809 McGee St., Kansas City London, Eng., Chelsea, S. W. 10, Milman's St. and Cheyne Walk

P. & A. Photos.

A BRIEF BIOGRAPHY OF LINDBERGH

CAPTAIN CHARLES A. LINDBERGH was born 25 years ago in Detroit, where his widowed mother, a teacher of science, now lives. His father, Charles A. Lindbergh, lawyer and member of Congress from Little Falls, Minn., died in May, 1924.

Captain Lindbergh started flying in 1921 when he was nineteen years old, taking his first lessons at Lincoln, Nebraska.

In September, 1923, he submitted his application to the War Department for admission to the Army flying school at Brooks Field, Tex. He was highly recommended for appointment by prominent Minnesotans. Upon examination he was found to meet all the requirements for admission, and on March 9, 1924, was appointed a flying cadet. After attending the army school for one year he was discharged as a flying cadet, rated as an airplane pilot, and commissioned a second lieutenant in the officers' reserve corps of the Army. He was subsequently promoted to the grade of captain in the air corps reserve, which rank he now holds.

After leaving the army Lindbergh flew for a year in various independent enterprises, including a flying circus. Finally, he was appointed chief pilot on the St. Louis-Chicago air mail route operated by the Robertson Aircraft Company, from which he was given an indefinite leave of absence to prepare for and carry out his transatlantic hop. He is a captain and flight commander in the 110th Observation Squadron, Missouri National Guard air unit in St. Louis.

Captain Lindbergh is a "four star" member of the Caterpillar Club, that fraternity of flyers who have successfully used their parachutes in emergency jumps. As a cadet in the army, Lindbergh and another pilot leaped to safety when their pursuit planes collided at 5,000 feet. Again, Lindbergh jumped from a spinning test plane at St. Louis when it was only 250 feet up and made a safe descent. Last winter he made his third and fourth jumps when he was caught in fogs at night on the mail route and could find no safe landing place.

Before taking up aviation Captain Lindbergh studied engineering for two years at the University of Wisconsin. It was while he was at Madison that he built his first air-propelled craft, an ice boat fitted with a high-powered motor and an airplane propeller. In it he used to skim over the frozen surface of Lake Mendota.

Underwood & Underwood.

Capt. Lindbergh and his Mother.

Lindbergh is a crackshot with a rifle. In the University marksmanship contests he could make fifty consecutive hits on a quarter-inch bull's-eye at a distance of fifty feet.

Captain Lindbergh's transatlantic flight was financially backed by the following St. Louisans: Harry Hall Knight, president of the St. Louis Flying Club; Harold M. Bixby, president of the Chamber of Commerce; Earl C. Thompson, vice-president of the Indemnity Company of America; Harry F. Knight, member of Knight, Dysart and Gamble, and father of Harry Hall Knight; Major William B. Robertson, head of the Robertson Aircraft Corporation; Major A. B. Lambert, head of the Chamber of Commerce Aeronautics Committee; J. D. Wooster Lambert, and the St. Louis *Globe-Democrat*—all of whom deserve our hearty thanks!

Above are the bare bones of Lindbergh's life up to date. Barring his recent great adventure and tremendous achievement they are simple, wholly American, always admirable. From now on, it is safe to say, his facts will be far more complex, but his success will be as steady and notable.

A Great Pilot

A Splendid Ship

AND

Attention to Detail

That's the Secret of

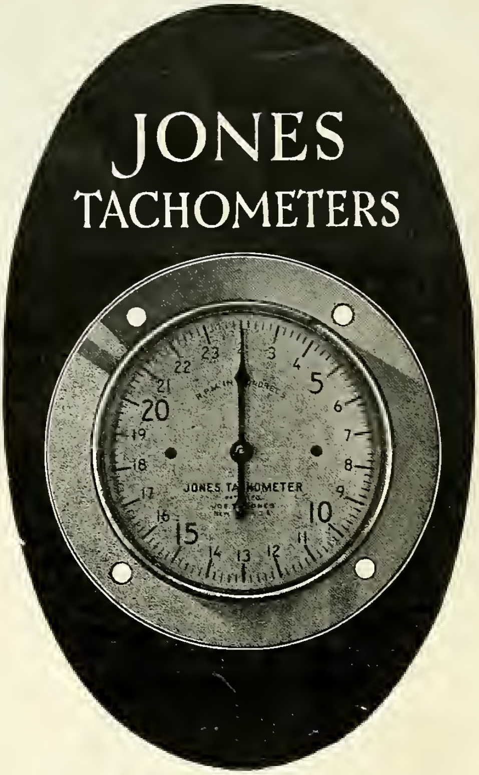
LINDBERGH'S
Wonderful Flight

IT'S OUR BUSINESS TO SUPPLY YOU WITH PARTS, ACCESSORIES AND SUPPLIES OF RECOGNIZED QUALITY AND RELIABILITY

Gas Lines, Strainers, Fittings
Instruments
Flying Clothing
Night Flying Equipment
Fireworks—Get them early this year

Everything for the Flyer

JOHNSON AIRPLANE & SUPPLY CO.
DAYTON, OHIO



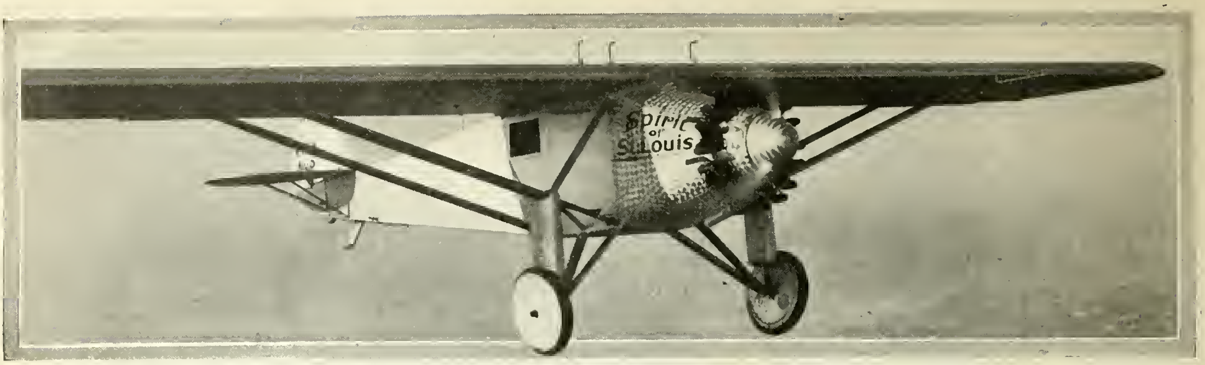
AGAIN—

CAPTAIN CHARLES A. LINDBERGH used the Jones Tachometer exclusively to indicate the speed of his engine on his famous Trans-Atlantic flight.

It is noteworthy also that Jones Tachometers were used exclusively on the NC-4 when it made its flight across the Atlantic in 1919.

Such outstanding service speaks for itself.

CONSOLIDATED
INSTRUMENT COMPANY
OF AMERICA, *Inc.*
41 East 42d Street, New York City



THE RYAN NY-P MONOPLANE

George F. McLaughlin

THE Ryan NY-P monoplane in which Capt. Lindbergh made his New York to Paris flight is a cabin monoplane with wings braced by a pair of streamlined struts. The chassis, which successfully withstood the enormous strain at the take-off, is of the split axle type. The vertical struts incorporate the shock absorbing cord, and the load of impact is carried through a sloping strut into the upper station of the fuselage. The fuselage is of rigid welded tubing construction of simple and sound design.

The tail skid is metal with rubber shock absorber of standard type. Wings are of wooden construction also of a standard design. The two beams are of built up I section with reinforcing spacers glued about every 18 inches. The ribs are built up of square battens with gusset plates and the trussing shows a very efficient use of wood.

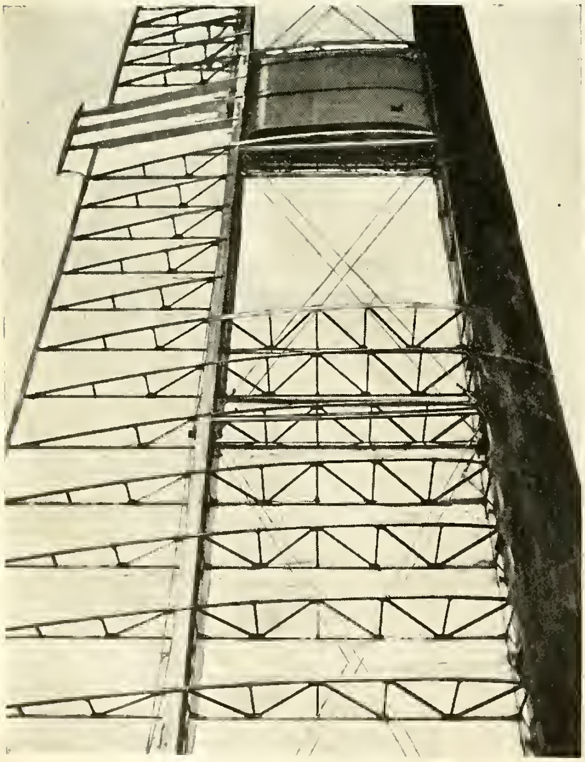
The drag bracing is double with aviation round wire for tension members and square wooden struts for compression members.

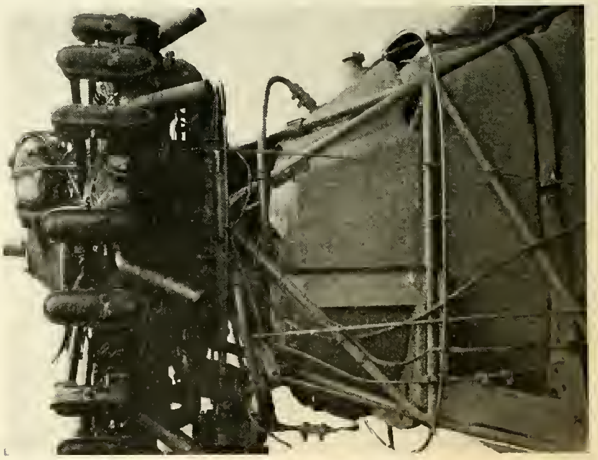
The plane is neat in appearance and shows very careful aerodynamical study. Controlling areas are of ample size and efficient section and contour. The stabilizer is adjustable. The Panther type aileron is one example of various aerodynamical refinements incorporated in this airplane.

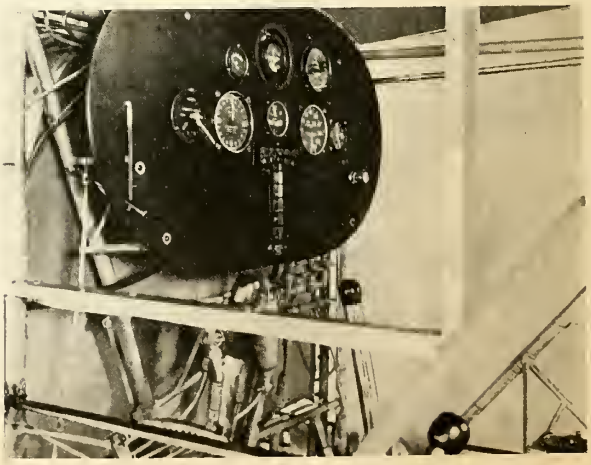
The cabin of the pilot was moved aft and the visibility forward is achieved by the use of a periscope.

For its transatlantic flight the plane was especially equipped and fitted with five gasoline tanks and one oil tank.

Of the 451 gallons of gasoline carried in the tanks, 366 gallons were used on the transatlantic flight, 85 gallons remaining, sufficient for another six hours, or about 800 miles of flight. Twenty gallons of oil were carried and about 5 used. (*Cont. on p.* 538)

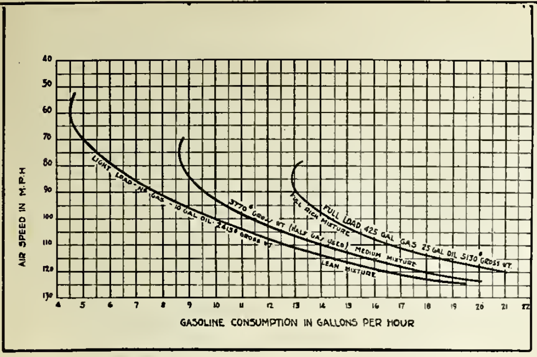




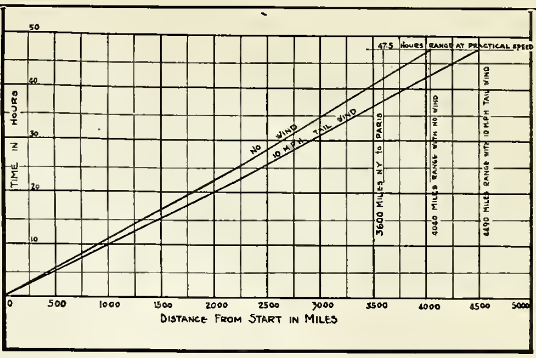


CONSTRUCTIONAL DETAILS

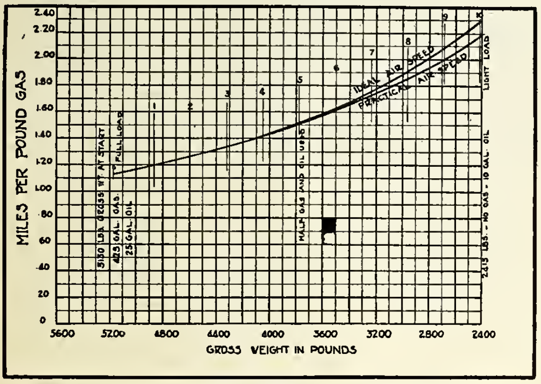
The view above shows the internal structure of the wing. The center section wing tank is in place; other wing tanks are placed in the openings at either side. The two views at the right show the engine mount and the instrument board arrangement. Fuel lines and valves are also shown.



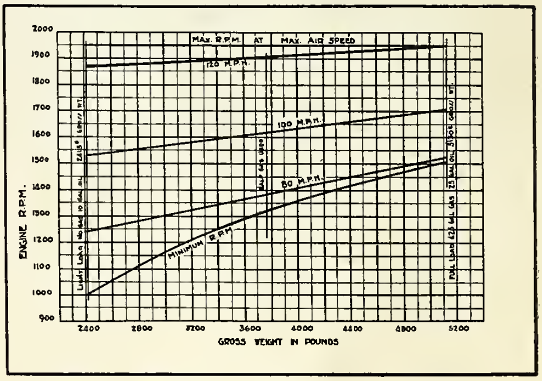
Gasoline consumption vs. air speed.



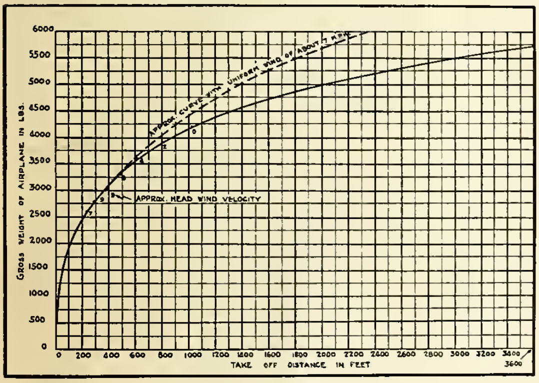
Time elapsed vs. distance travelled.



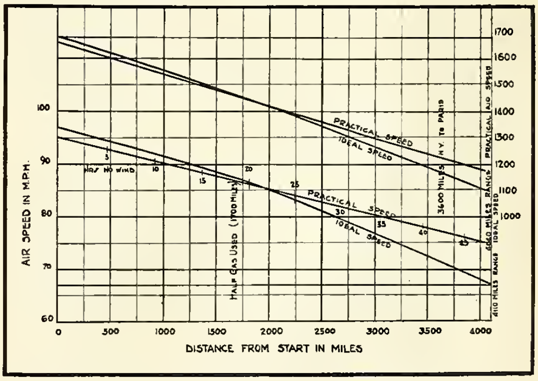
Miles per pound of gasoline vs. gross weight.



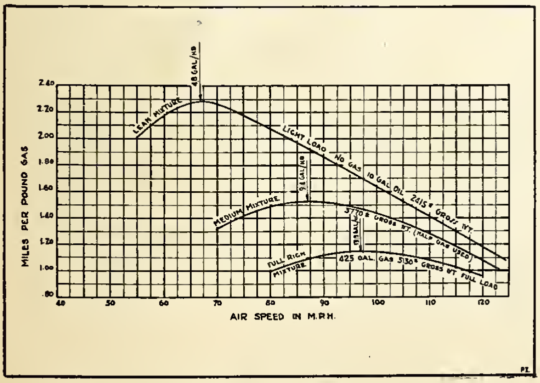
Engine revolutions per minute vs. gross weight.



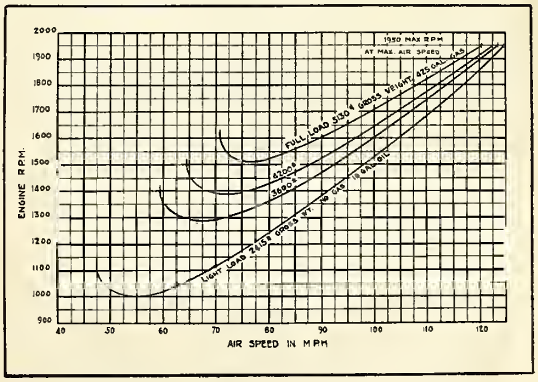
Take-off distance tests (Camp Kearney Field, San Diego).



Air speed and revolutions per minute vs. distance.

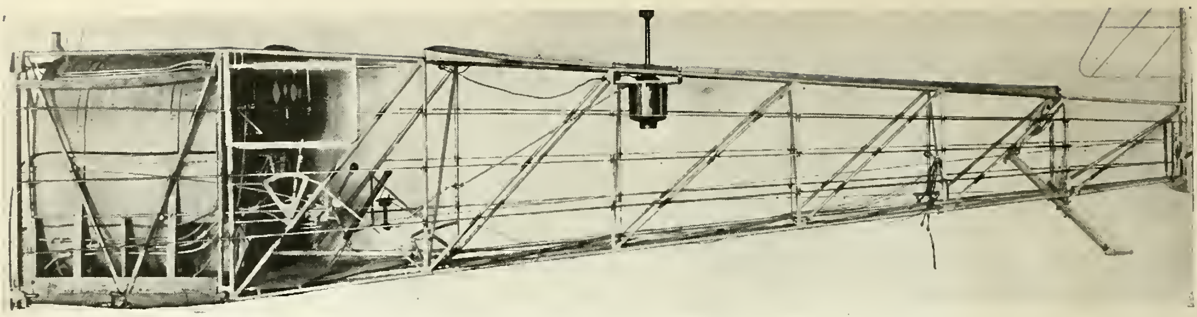


Fuel economy: Miles per pound vs. air speed.



Engine revolutions per minute vs. air speed.

CHARTS OF PERFORMANCE CHARACTERISTICS, RYAN TYPE NY-P MONOPLANE



Steel fuselage construction showing main gas tank, instrument assembly of the Ryan NY-P monoplane.

A Standard Steel propeller is used. On the instrument board the following instruments are installed: oil pressure gauge; Pioneer Earth Inductor compass; altimeter; Splitdorf ignition switch; Jones tachometer; bank and turn indicator; air speed meter; Waltham clock; fore and aft level gauge and transverse level gauge; Lunkenheimer priming pump. A motometer for oil temperature was also used.

More detailed notations of additional parts and products used on the NYP will be found in the advertisements and other editorial pages of this issue of AERO DIGEST.

The entire ship is covered with aluminum finish with natural finished aluminum cowls. The numerals and other markings on the surfaces are in black.

Performances as calculated by Mr. Donald A. Hall, designer of the ship were very closely paralleled by the actual performances of the ship. We reproduce several of the graphs prepared by Mr. Hall as an instructive example of carefully prepared engineering data and to show the method followed by the designer in illustrating his predictions.

RYAN N. Y. TO PARIS AIRPLANE

General Data

Wing span	46 feet
Wing chord	7 feet
Total wing area	319 square feet
Aerofoil	Clark Y
Engine—Wright J-5-C	223 b.h.p. at 1800 r.p.m.
Propeller—Standard Steel Propeller Co.—duralumin, 16¼ degrees pitch.	

	Weights	*(pounds)*
	Machine empty, complete with instruments	2150
Useful load	Pilot	170
	Miscellaneous	40
	Gasoline—425 gal. (6.12 lbs. per gal.)	2600
	Oil—25 gal. (7 lbs. per gal.)	175
	Total useful load	2985
	Gross weight fully loaded at start of flight	5130
	Gross weight lightly loaded at end of flight without gasoline and food but with 10 gallons of oil left	2415

Loading

Wing Loading	Full load at start of flight	16.1 lbs. per sq. ft.
	Light load at end of flight	7.57 lbs. per sq. ft.
Power Loading	Full load at start of flight	23.0 lbs. per b.h.p.
	Light load at end of flight	10.8 lbs. per b.h.p.

Weight Distribution

(Item)	*(Pounds)*
Wing, complete	360
Engine	480
Propeller	55
Gas tanks (wing)	105
Gas tanks (fuselage)	112
Gas tanks (motor mount)	62
Oil tanks	18
Lift struts	85
Engine mount	70
Fuselage	170
Empennage	61
Undercarriage	115
Tail skid	12
Controls	14
Instruments	25
Gas and oil lines	12
Oil	170
Gasoline (wing)	900
Gasoline (fuselage)	960
Gasoline (motor mount)	540
Pilot's seat	8
Pilot	185
Miscellaneous	202

Calculated Performance

	Full load	*Light laad*
Maximum speed	120 m.p.h.	124.5 m.p.h
Minimum speed	71 m.p.h.	49 m.p.h.
Economic speed	97 m.p.h.	67 m.p.h.

Fuel Economy at Economic Speeds

Full load with full rich mixture	6.95 miles per gallon
Light load with lean mixture	13.9 miles per gallon

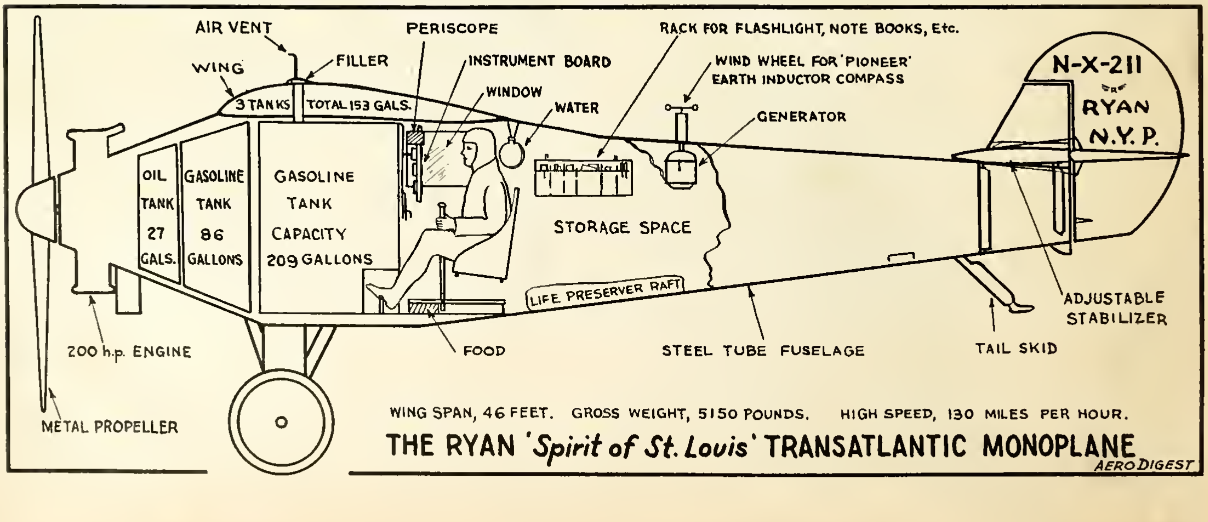
Range

At ideal speeds of 97 start and 67 m.p.h. at end	4110 miles
At practical speeds of 95 start and 75 m.p.h. at end	4040 miles

Flight Test Performance

Maximum Speed

With 25 gal. gas and 5 gal. oil	129 m.p.h. over 3 k.m. course
With full load of 425 gal. gas and 25 gal. oil (approx. based on calculated performance)	124 m.p.h.
With 25 gal. gas and 4 gal. oil (by air speed meter)	128 m.p.h.
With 201 gal. gas and 4 gal. oil (by air speed meter)	127 m.p.h.



WING SPAN, 46 FEET. GROSS WEIGHT, 5150 POUNDS. HIGH SPEED, 130 MILES PER HOUR.

THE RYAN '*Spirit of St. Louis*' TRANSATLANTIC MONOPLANE

8 *years ago!*

NC-4

and even greater today

LINDBERGH

and the

Spirit of St. Louis

HIGH SPEED
NON-GRAN
BEARING BRONZE

Both planes had NON-GRAN bushings in the most vital parts of their motors.

Recognized as the World's *Finest* Bearing Bronze.

AMERICAN NON-GRAN BRONZE CORPORATION
Berwyn, Chester County, Pa.

THE WRIGHT WHIRLWIND J-5C ENGINE

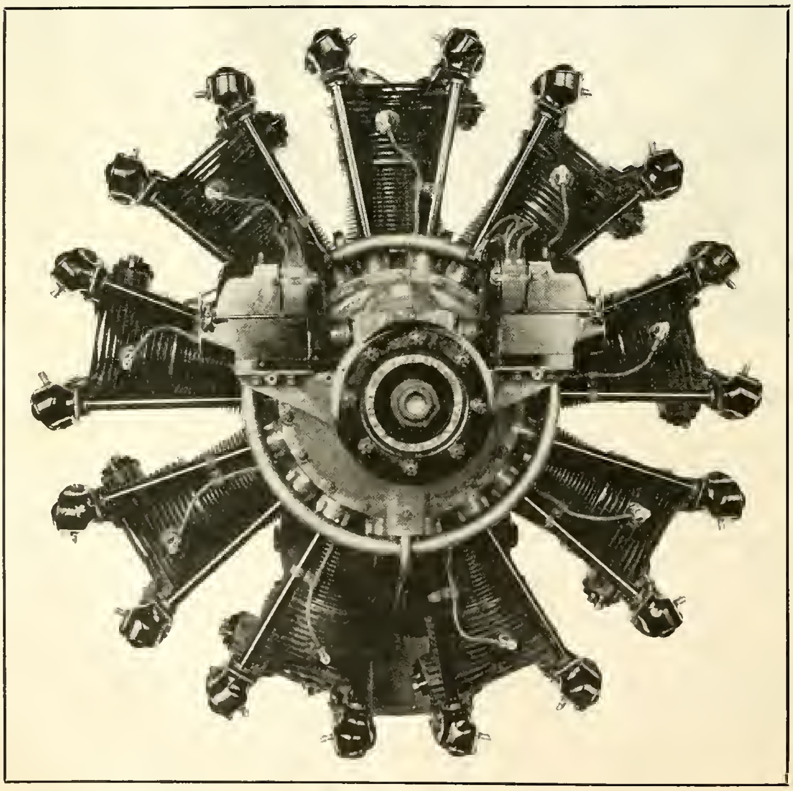
THE wonderful performance given by the Wright "Whirlwind" model J-5 C used to power Captain Lindbergh's Ryan monoplane is the latest of a long series of important achievements of this type of power plant. Captain Lindbergh is enthusiastic in his praise of his engine which gave him not the slightest cause for worry at any time. Put to the limits of its capacity, his engine was required to lift from the ground the greatest load ever given to a single engined plane to carry. Uninterrupted functioning for 34 hours was one of the most essential requirements for the safety of the enterprise. The success of this flight speaks volumes for the reliability of the engine.

General specifications of the Model J-5 C and J-5 CA Whirlwind engines are as follows:

Bore	4.5 inches
Stroke	5.5 inches
Displacement	788 cubic inches
Compression ratio	5.2:1
Guaranteed h. p. (sea level)	200 at 1800 r. p. m.
Weight, dry	508 pounds (average)
Length over all (ex. starter)	34 inches
Diameter over all	45 inches
Fuel consumption at 200 h. p.	Not more than .60 pounds per h. p. per hour
Oil consumption at 200 h. p.	Not more than .025 pounds per h. p. per hour

The Model J-5 crankcase is essentially the same as on preceding models, although it is not interchangeable with any of them. The outstanding improvement is again in the cylinder construction and the valve gear has been entirely altered with a view to greater economy in maintenance.

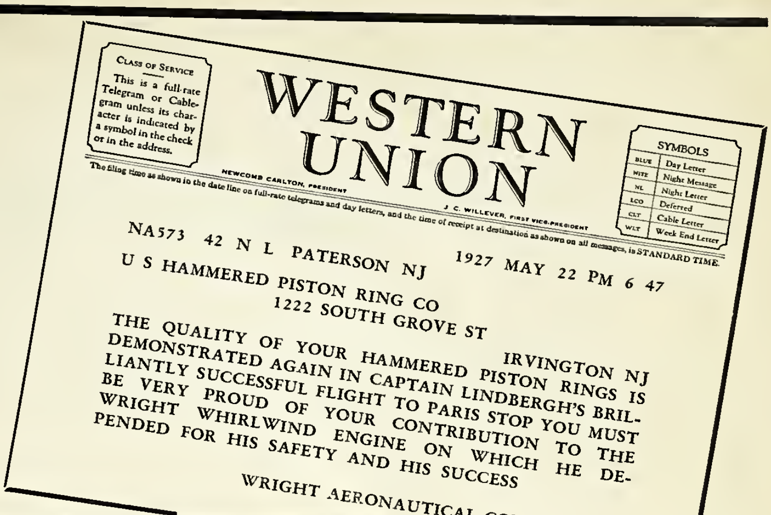
The new cylinder is built in two parts; first, the cylinder barrel, with integral steel cooling fins machined out of the barrel forging; second, the cast aluminum alloy cylinder head, both screwed and shrunk onto the top of the barrel. The integral barrel-cooling fins permit direct heat transfer to the air, without the necessity of passing through the steel sleeve and aluminum cylinder barrel of the former models. The combustion chamber in the cylinder head is hemispherical in form and the inlet and exhaust valves are set at an angle of 70 degrees with their heads flush in the combustion chamber. The exhaust valve is of the salt-cooled type which completely eliminates overheating. This design permits larger valves, with increased lift; more direct and larger intake and exhaust ports, with consequent improvement in the full throttle volumetric efficiency; and increased area of fins around the valve ports and cylinder head, to more effectively cool the cylinder. This cylinder and cylinder head construction is largely responsible for the improved fuel economy of the Model J-5, which on a fifty-hour full throttle endurance test averaged .458 pounds per h. p. per hour with an output of 216 h. p. at 1827 r. p. m. It is doubtful if any engine in the world, either water cooled or air cooled, has been able to better this fuel economy during such a test.


Propeller end of the 200 h.p. Whirlwind Model J-5 C engine.

The valve gear is enclosed, thus preventing both entrance of dust, dirt, and abrasives to the rapidly reciprocating parts, and blowing away of the lubricants from the bearing surfaces. The rocker arm has been generously increased in size and has been provided with improved bearings and lubrication. The rocker arm roller has been enlarged and is made of high heat resisting alloy steel which effectively eliminates rapid wear at this point. The valve clearance adjustment has been moved from the push rod, as on previous models, and is now incorporated in the rocker arm itself where micrometer divisions provide an easy and convenient means of adjustment without the use of feelers. The push rod ball end fits into an easily replaceable socket made of ball bearing steel; this socket in turn is housed in an adjustment seat screwed into the rocker arm end. The adjustment is locked in place by a suitable clamping screw on the end of the rocker arm. The push rods are made of nickel steel tubing and are provided with ball ends also of ball bearing steel. These ball ends, and their sockets in the rocker arm, are twice the area of those on the Model J-4B, giving an ample increase in contact area. This increased area, and improved material, results in a much greater life with remarkable freedom from frequent adjustment and lubrication.

The endurance tests on the Model J-5 engine have been exceptionally severe. Three fifty-hour endurance tests have been run on this engine, in addition to approximately 100 hours of miscellaneous calibration and fuel consumption tests. The first fifty-hour endurance test was run at 1971 r. p. m. at full throttle, giving an average mean effective pressure of 121 pounds per square inch. The average power developed during this test was 238 h. p. and the fuel consumption was .508 pounds per h. p. per hour. The second fifty-hour endurance test was run at 1827 r. p. m. at full throttle and showed an average power of 216 h. p., with a fuel consumption averaging .458 pounds per h. p. per hour and a mean effective pressure of 119 pounds per square inch. The third fifty-hour endurance test was made in an effort to determine the overload durability of the engine. To this end an external supercharger was provided, arranged so as to force air into the carburetor. No other change was made in the engine itself. In spite of the fact that this test was conducted during the hottest part of the summer with the air temperature averaging 150 degrees F., at the point of entrance to the carburetor, the engine ran fifty hours without difficulty, averaging 295 h. p. at 2150 r. p. m., and with a fuel consumption of .510 pounds per h. p. per hour. While this remarkable test has no immediate practical value to commercial aeronautics, it does indicate the extreme durability and strength built into the engine and gives assurance to its users that under normal conditions the life of the engine is exceptionally long.

"U. S. HAMMERED PISTON RINGS did their bit for LINDBERGH on his flight from NEW YORK TO PARIS"—



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1222 SOUTH GROVE ST
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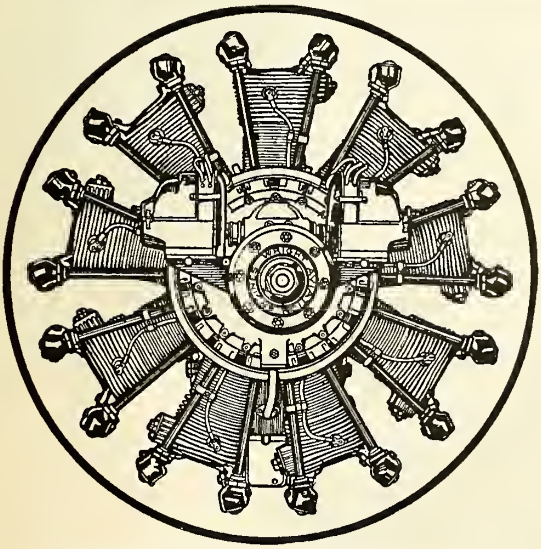
THE QUALITY OF YOUR HAMMERED PISTON RINGS IS DEMONSTRATED AGAIN IN CAPTAIN LINDBERGH'S BRILLIANTLY SUCCESSFUL FLIGHT TO PARIS STOP YOU MUST BE VERY PROUD OF YOUR CONTRIBUTION TO THE WRIGHT WHIRLWIND ENGINE ON WHICH HE DEPENDED FOR HIS SAFETY AND HIS SUCCESS

WRIGHT AERONAUTICAL CORPORATION

IN the interest of mechanical and service perfection (as nearly as that is possible) the Wright Aero engineering Staff gave every part entering their product the most severe tests ever made before adoption. U. S. PISTON RINGS having a true circle, flat surface and uniform wall thickness therefore *were adopted*. If you want the longest wearing SAFE OIL and COMPRESSION TIGHT RINGS, TEST OURS under the most exacting of TESTS, against all competition. Send for Samples.

THE ENGINE THAT TOOK "SLIM" ACROSS SAFELY!



The Wright Whirlwind Model J-5C

Territories open
Distributors write for proposition

U. S. HAMMERED PISTON RING CO.

IRVINGTON, NEW JERSEY

THE EARTH INDUCTOR COMPASS

By Brice Goldsborough

Pioneer Instrument Company

THE Earth Inductor Compass consists of three major units—a generator, a controller and an indicator. Associated with these are a casing and shaft which establish a mechanical connection between the generator and the controller and a cable which electrically connects the generator and indicator.

The generator is the same in principle as any electric generator, except that it has no artificially induced field. It has an armature, a commutator and a pair of brushes. The armature unit is supported on gimbals so that its position will be undisturbed by ordinary rolling and pitching of the airplane. A windmill drives the armature and commutator through a universal joint. The brushes are supported for orientation about a normally vertical axis, and electrical connections are made to them. The earth's magnetic lines of force running from north to south form the poles of the generator.

The controller is a purely mechanical device. It is connected to the generator through the shaft and casing. Rotation of the controller causes a corresponding rotation of the brushes of the generator. Dials upon the face of the controller shows the angle through which the brushes have been orientated in relation to the airplane.

The indicator is a galvanometer which is electrically connected by means of the cable to the brushes of the generator. The position of the hand of the indicator, therefore, shows the electrical potential being produced by the generator.

The operation of the compass depends upon the rotation of the armature of the generator, which cuts lines of flux of the earth's field and generates electricity. It is exactly similar in action to an ordinary D. C. generator.

There is a little four-cupped windmill and paddlewheel on top of the fuselage inside of which is placed the generator. This is the armature driver. When the plane is in the breeze created by the propeller, or by the motion of the plane though space, it rotates this little dynamometer type of wheel at high speed.

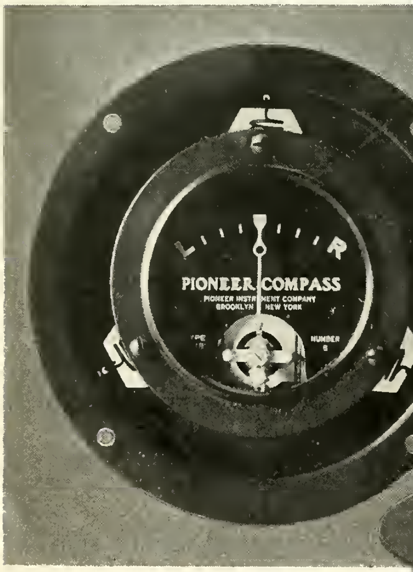
As the armature rotates it cuts the magnetic lines of force of the earth which run from north to south, and produces a voltage which is sufficient to indicate on the compass, which, as you will note by the cut, is a zero centered galvanometer. As in any ordinary electrical generator, there is a position of the brushes which will give the maximum output this position obtains when the brushes make contact with the commutator bars which are connected, at any instant, with the coil, which is directly between the two pole pieces at that instant. If the brushes are moved so as to make contact with a coil which forms an angle with respect to the pole pieces, this coil naturally is not being cut by as many lines of force as would pass through it if it were exactly between the former, and consequently it would generate a lower voltage.

By this same line of reasoning one can readily see that a point will be reached where the coil is at right angles to the pole pieces and consequently no voltage is induced. This also applies to the compass generator. We consider the earth's flux or lines of force as forming north and south pole pieces of this generator.

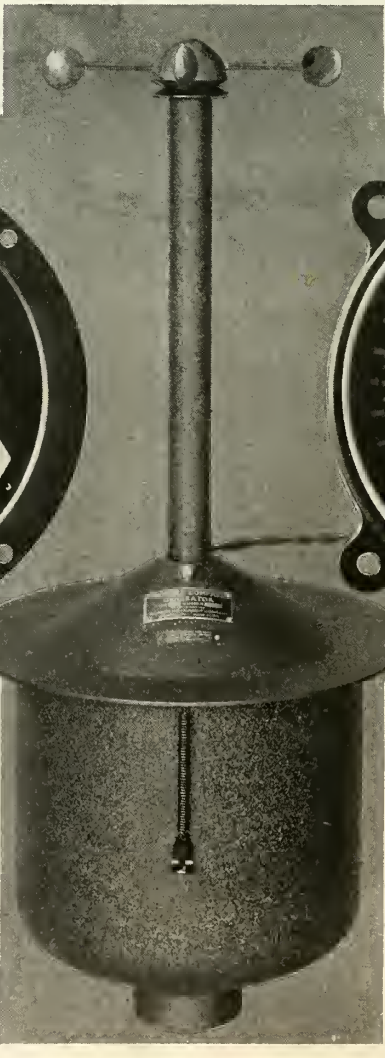
The controller is connected to the brushes by a flexible shaft, and when it is turned it rotates the brushes around the commutator by means of a worm drive. When the controller is set to read north and the plane is headed in this same direction the brushes will be east and west. In this position they are connected to a coil which is at right angles to the earth's magnetic flux and do not produce any current to work the galvanometer. The pointer of the latter will stay on dead center.

In the same manner, if the controller is set to a due eastern position and the plane headed east the brushes will again make contact through the commutator with a coil which is at right angles to the earth's lines of force and the meter will again read zero. If the plane is now turned a little to the left and the controller still remains on "east," the meter will show a reading because the coil is being cut by some lines; if it is turned further to the left it will cut a greater amount of flux and give a higher reading to the left on the meter.

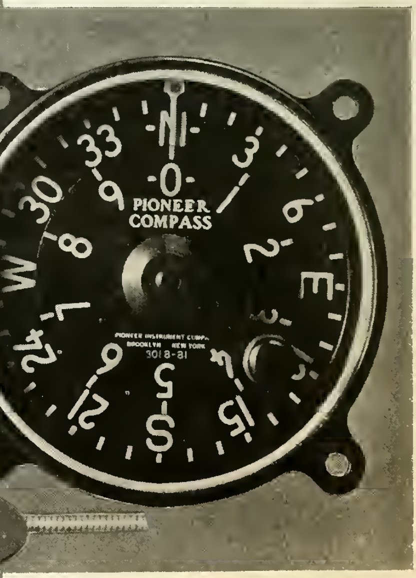
If the plane is headed to the right it will read less and less, and when it is headed in the direction indicated on the controller it will read zero. Moving it further to the right the meter will again read on the side marked "right." (*Continued on page* 544)



The Indicator.



The Generator.



The Controller.

CAPTAIN LINDBERGH

modestly used the pronoun "we" in describing his flight. But no amount of praise for his ship can detract in any way from the greatness of his achievement.

The fact that the sensitive rocker arms of the motor were lubricated for the grueling journey by means of Alemite system played an important part in carrying him safely to his destination. But all credit and all glory should be his.

Bassick Manufacturing Company

2650 North Crawford Avenue
Chicago, Illinois

The course to be followed is set on the controller dial; this moves the brushes to some position around the armature; the plane is now pointed until the hand or the compass meter reads zero, i. e., it remains in the exact center. A deviation of the needle to the left indicates that the plane is to the left of the course set on the controller and it must be brought back to zero by heading the plane more to the right. Once the course is set the pilot has only to keep the plane so headed that the hand of the compass always remains on zero, and he will always be on the correct course.

An unknown direction can be determined by rotating the controller dial until the compass reads zero, when the course will correspond to the point indicated on the controller. The latter has thirty-six divisions each corresponding to ten points on the compass.

It will be seen that a direction exactly opposite to the figured course will give a zero reading, but this is easily avoided by noting that on the correct heading the indicator hand always moves in the direction in which the craft turns; should it move opposite, the reverse heading is indicated.

In order to fully appreciate the advantages of the Pioneer Earth Inductor Compass, it is necessary to consider the characteristics of ordinary magnetic types used on aircraft.

The directive force of a magnetic compass depends upon the reaction between its magnets and the earth's magnetic flux. So long as the magnetic element of such a compass remains horizontal, the magnets tend to align themselves with the horizontal projection of the earth's flux, and the compass tends to indicate the angle of heading in degrees from magnetic north. At best the north-seeking tendency is not great, as the torque due to the reaction between the magnets and the earth's flux is small.

A magnetic compass is affected by magnetic or ferrous materials in its immediate vicinity. These are principally the engine with its ignition accessories and parts of the aircraft control system. The latter, being movable, produce errors of varying magnitudes. Stuctural parts of the aircraft, if of ferrous material, may affect the compass, even though unmagnetized, due to induction from the magnetic needles themselves. To a large extent these magnetic errors may be corrected by the use of compensating magnets, but such compensation is uncertain and must frequently be checked if any accuracy is to be assured.

The outstanding feature of the earth inductor compass is the dis-association of the magnetic element from the indicating element. Instead of using magnetic needles, the direction responsive element of the earth indicator compass is an electric generator the same in principle as any electric dynamo except that no artificial field is used, the earth's flux serving for a field. The output of such a generator is dependent upon the angular relation between its brushes and the earth's flux. With such a generator the problem of stability becomes relatively simple, as the revolving armature, acting as a gyroscope, actually resists motions tending to disturb its stability.

As to its value we have but to point again to the New York-Paris flight in which young Lindbergh confidently staked his life on the accuracy of this "aviator's eye."

MAGNETOS ON THE WRIGHT ENGINE

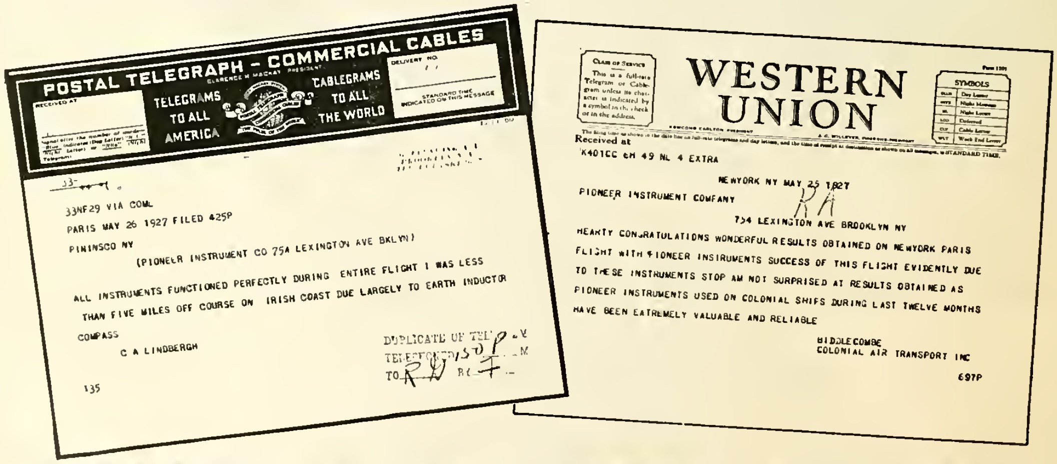
THOMAS Z. FAGAN, vice-president of the Scintilla Magneto Company, Inc., a subsidiary of American Brown Boveri Electric Corporation, was on the ground at Roosevelt Field prior to the take-off of Captain Lindbergh and made a thorough test and inspection of the rotary magnetos which are a part of the plane's motive equipment.

The Scintilla magneto is based on an entirely new principle of design and construction. It has a permanent magnet which is described as the most robust part of the apparatus and which rotates. The extremely delicate parts such as the contact breaker, with its contact points and armature, are stationary. The principal characteristics of the magneto of this type lie, therefore, in the complete inversion of the usual systems of magneto operation.

Since the first Scintilla aircraft magnetos were adopted by the Government and the aircraft industry, many improvements have been made and, as a result, a marked increase in the efficiency of operation and endurance have been obtained.

PIONEER AIRCRAFT INSTRUMENTS AND EQUIPMENT

PI PI



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ELECTRIC TOOLS

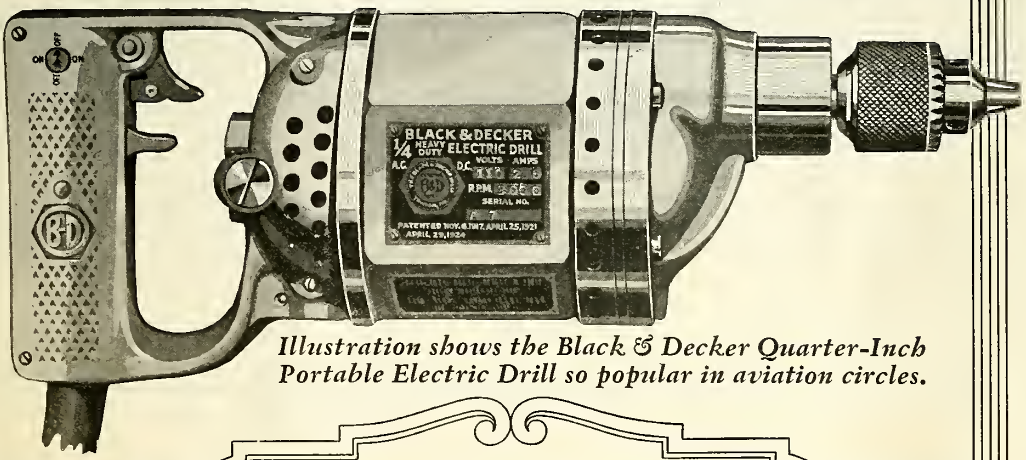

Illustration shows the Black & Decker Quarter-Inch Portable Electric Drill so popular in aviation circles.

These tools are well known to most manufacturers of aircraft and airplane motors.

Every flying field should be equipped with Black & Decker Electric Tools. They are just as useful for maintenance and overhaul work as for original manufacture.

YOUR ATTENTION IS PARTICULARLY CALLED TO

THE BLACK & DECKER METHOD

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KANSAS CITY
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SEATTLE

OIL USED ON TRANS-ATLANTIC FLIGHT

CAPTAIN CHARLES A. LINDBERGH'S transatlantic flight gave the Vacuum Oil Company another opportunity to demonstrate its interest in the advancement of aviation. That company played a greater part in Captain Lindbergh's great accomplishment than in supplying the oil—from the time Captain Lindbergh announced his intention of making the hop, he had, practically at his command, the service of their entire organization.

H. L. Dickey, a Vacuum Oil Company engineer stationed on the Pacific Coast, went down to San Diego, prepared to show Captain Lindbergh the advantages of his company's motor oil. He found that, so far as giving the young flyer a sales talk was concerned, his trip was unnecessary. Captain Lindbergh had already determined to use Gargoyle Mobiloil "B". Mr. Dickey assured Lindbergh that his company would do everything it could to make his flight a success and urged him to call upon the company for any aid he needed.

Lindbergh took him at his word and shipped to the Vacuum Oil Company in New York the ten drums of gasoline he needed for his flight, asking that it be cared for until he needed it.

When Lindbergh arrived in St. Louis among the first to greet him were several Vacuum Oil Company men, including G. R. Epps, another engineer, who gave him more service. Over the long distance telephone they arranged for Lindbergh's hangar at Garden City, his room at the hotel, got messages to the Wright Company and the Pioneer Instrument Company so that their engineers might be on hand as soon as he arrived. They also arranged for his passports and every other service that they could think of.

When Captain Lindbergh landed on Long Island he found another engineer, L. B. Umlauf, the Vacuum Oil Company's aviation specialist and himself an experienced pilot, waiting for him. With him were Kenneth Lane, Ed Mulligan and Kenneth Boedecker of the Wright Company and Brice Goldsborough of the Pioneer Instrument Company.

Captain Lindbergh immediately turned oil and fuel problems over to Lieutenant Umlauf, who found time to handle that end of the job and to assist in the work on the instruments as well. The engineers worked all night on the plane and had the weather been all right Lindbergh could have been off to France the next morning. The three engineers formed the nucleus of the little committee which took Captain Lindbergh's affairs into their hands and kept from him a multitude of distracting details.

The oil supplied was regular stock, not especially prepared. This fact shows not only the faith of the Vacuum Oil Company in the quality of their product but their faith in its uniformity as well. It was taken out of the stock of the company's Garden City warehouse nearby.

The company's explanation of their faith in their standard product is that that particular grade of oil had been studied, not only by their own engineers but by the Wright engineers and that they were entirely satisfied that it would be impossible to make an oil that would better suit that particular engine. Their faith in their product was justified by the splendid manner in which the motor functioned on the long hop.

PLYWOOD ON THE SPIRIT OF ST. LOUIS

FIRST across the Atlantic with the NC planes in 1919, first around the globe with the four world cruisers, the plywood used in Captain Lindbergh's Ryan monoplane, the "Spirit of St. Louis," is now the first to make a New York-Paris flight.

Haskelite is an important part of the structure of Lindbergh's plane, being used exclusively in the wing construction, and forming a considerable part of the fuselage.

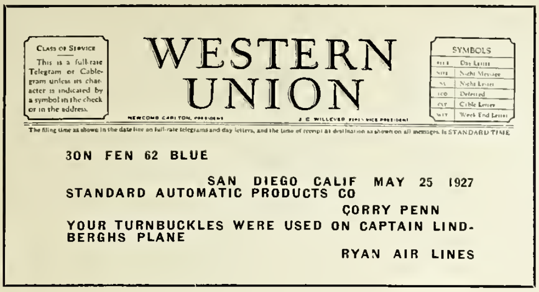
For the wing beams, carrying the tremendous resistance of the air against the wings of the plane, Haskelite, having a total thickness of only one-eighth inch, was used. The leading edges, the curved front edges of the wings, were also of the Haskelite, which can be curved to any reasonable degree.

Haskelite is a laminated wood consisting of thin sheets, or plies, of wood laid together with the grain of adjacent layers at

Our Sincere Congratulations to
CAPTAIN LINDBERGH
on his flight from New York to Paris

His Whirlwind Engine
was equipped with

SCINTILLA
AIRCRAFT MAGNETOS
SCINTILLA MAGNETO CO., INC., SIDNEY, N. Y.
Contractors to the U. S. Army and Navy



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NEWCOMB CARLTON, PRESIDENT
J. C. WILLEVER, FIRST VICE-PRESIDENT

SYMBOLS	
BLUE	Day Letter
NITE	Night Message
NL	Night Letter
LCO	Deferred
CLT	Cable Letter
WLT	Week End Letter

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30N FEN 62 BLUE

SAN DIEGO CALIF MAY 25 1927
STANDARD AUTOMATIC PRODUCTS CO
CORRY PENN

YOUR TURNBUCKLES WERE USED ON CAPTAIN LINDBERGHS PLANE

RYAN AIR LINES

Congratulations!
Captain Lindbergh

It is a great pleasure for us to announce that our products were used in the construction of the "Spirit of St. Louis"

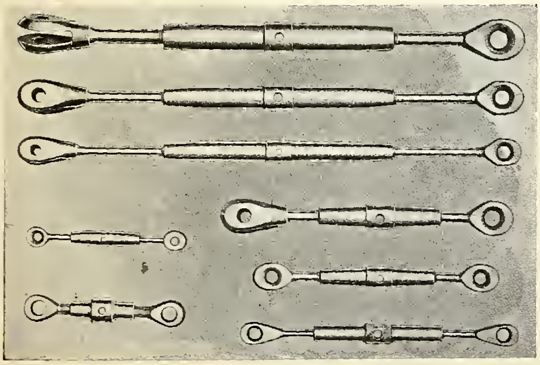
STANDARD AUTOMATIC PRODUCTS CO.

ORIGINAL MANUFACTURERS OF
STANDARD TYPE TURNBUCKLES

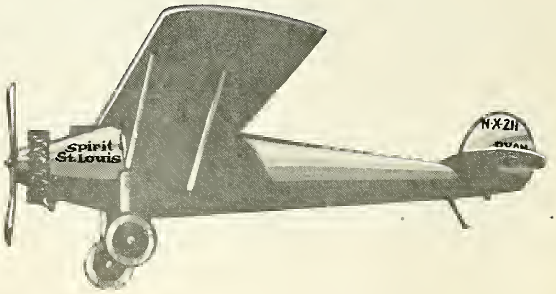
Airplane parts of merit
TURNBUCKLES, CLEVIS ENDS
CLEVIS PINS, AIRCRAFT BOLTS
(milled from bar)

Direct Contractors to United States Army and Navy and many airplane manufacturers

STANDARD AUTOMATIC PRODUCTS CO.
Corry, Pennsylvania



LUNKENHEIMER
PRIMING PUMP AND FITTINGS
on the
"Spirit of St. Louis"



On and on—mile after mile—Capt. Lindbergh piloted his "Spirit of St. Louis", bravely battling the elements—dauntlessly carrying on in his successful New York to Paris non-stop flight.

Nobody knew better than Lindbergh how much depended upon an unfailing fuel and oil supply to keep his whirlwind engine running smoothly hour after hour until he finally reached his goal.

Failure of any part of the vital fuel feeding mechanism would have spelled disaster.

But the manufacturers of this magnificent machine wisely chose LUNKENHEIMER PRIMING PUMP AND FITTINGS, secure in the fact that they would hold tight and that they measured up to the unusually severe demands of this great undertaking.

AMERICA'S BEST
LUNKENHEIMER
SINCE 1862

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U.S.A.
NEW YORK CHICAGO BOSTON PITTSBURGH
SAN FRANCISCO NEW ORLEANS
LONDON
EXPORT DEPT 129-135 LAFAYETTE ST. NEW YORK

right angles and bound together with a secret-process blood albumen glue.

Except for the wings, which were lengthened to carry the unusual load, the "Spirit of St. Louis" is a standard Ryan monoplane, in the construction of which Haskelite has been standard for years.

Not only because of its strength and lightness has Haskelite been so widely adopted in aircraft construction, but also because of its weather-resisting qualities. Lindbergh's flight, from comparatively warm weather in New York through sleet and fog and dry weather, cold and warm temperatures, needs only to be pointed to if there is any question of the absolute need for weatherproofness in material used for aircraft. Haskelite is so absolutely waterproof that a panel can be boiled in water without separating the plies.

FUEL FOR THE TRANS-ATLANTIC HOP

THE gasoline used by Captain Lindbergh was manufactured by the Standard Oil Company of California in their Richmond, California, Refinery and is known as Red Crown aviation gasoline. Captain Lindbergh used this grade of gasoline when testing the Ryan plane at San Diego as well as in his flight from San Diego to New York.

A supply of Red Crown aviation gasoline was shipped to Roosevelt Field, Long Island, from which supply Captain Lindbergh fueled his plane for the transatlantic flight. This gasoline was purchased from the Standard Oil Co. of California by Captain Lindbergh.

INSTRUMENTS USED BY CAPTAIN LINDBERGH

WITHIN the organization of the Pioneer Instrument Company there is more than the mere mechanical fabrication of materials that go to make up those instruments which are so vitally important to the success of aviation expeditions and more particularly every day flying operations. It seems that no matter where one goes in aviation circles where there is unusual activity one will always find Brice Goldsborough or some other representative of the Pioneer Company, whether that aviation activity be a Pulitzer Race, a National Air Meet, a Commercial Reliability Tour, a World Flight, a North Pole Flight, a Pan-American Good Will flight, or a flight for the promotion of aviation such as the eight-thousand mile circum-continental flight promoted by that far-seeing practical aviation enthusiast, Mr. Daniel Guggenheim, one of the Pioneer men will be on hand.

Now the eyes of the world and more particularly the eyes of the aviation industry are centered upon Captain Charles A. Lindbergh. Watching the progress of Lindbergh's epochal flight more particularly after completing that outstanding journey with but one stop between the two coastal boundaries of the United States, the unusual activity observed was the preparation for the outstanding navigational trial heretofore unaccomplished. The versatility of the Pioneer organization was put to the severest test in the history of aviation.

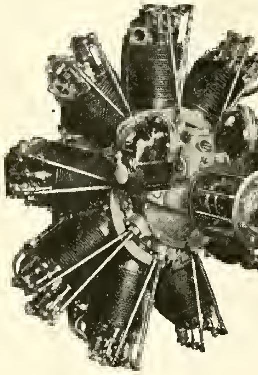
Captain Lindbergh put the problem of preparing his navigation equipment up to the Pioneer Company. And the preparations as observed were such as to indicate no lack of confidence on the part of the company or of its representatives. When Lindbergh swooped down into our midst Goldsborough was very actively engaged in preparing two other expeditions for a transatlantic flight. Placed as he was in the most unusual position of advisor to all competitors and having previously been considered as the navigator for one of the contesting entrants, he demonstrated a versatility beyond the call of duty and stands to-day highly regarded by all the contestants.

During the period that was required to check all the instruments that were so essential to the success of Lindbergh's venture, a weather eye was kept on the meteorological conditions prevailing and leading up to a suitable time for departure. The Weather Bureau in New York City, assisted by reports gathered by the Radio Corporation of America and the *New York Times*, compiled and furnished the three expeditions with daily reports.

The instruments that needed particular attention and those that were to be put to the severest trial were the compasses.

In the maritime services compasses have the peculiar quality of being affected in their direction-pointing efforts by surrounding magnetic materials, such as the ship's hull and supporting structures. So in all aircraft the compasses are similarly affected by the motor or motors and the steel structures that go to make up the airplane. The process of "swinging ship" is very important

We congratulate you, Captain Lindbergh!



The great New York to Paris flight was made possible only through the united efforts of a fine flyer and a fine machine.

Our company is pleased to announce that we supply brass parts to the Wright Aeronautical Company, who built the engine of this famous plane.

THE ROBERTS BRASS MANUFACTURING CO.
Detroit, Michigan

(Telegram)

Paterson, N. J.

Vellumoid Co.
Boston, Mass.

By preventing leakage Vellumoid gaskets contributed materially to Capt. Chas. Lindbergh's success in his New York to Paris non-stop flight with a Wright Whirlwind powered Ryan monoplane.

(Signed)

Wright Aeronautical Corp.

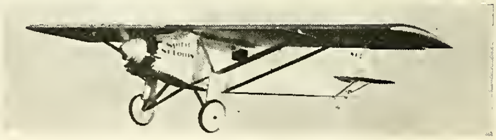
Dated, May 22, 1927

Congratulations!

OUR heartiest congratulations to you, Captain Lindbergh for your splendid achievement. We are proud of your success. We are proud too that a

BOYCE MOTOMETER

was used on the Wright powered Ryan Monoplane in which the first New York-Paris flight was made.



The MOTO METER CO., Inc.

4 Wilbur Avenue
Long Island City, New York

Chicago Office: 820 Tower Court

"The Engine Never Faltered"

CAPTAIN LINDBERGH'S world famous flight from New York to Paris thoroughly tested the man, the ship and the engine.

The Cape Ann Tool Company supplied the forgings which withstood the strain of the thirty-three hours continuous flight.

The Wright Aeronautical Company uses our forgings for they cannot afford to use anything other than the best quality.

We have a hammer capacity for work of practically any size of drop forged pieces. For over 30 years we have produced drop forgings and work of the highest quality in alloy and carbon steel; also in brass, copper and similar metals.

CAPE ANN TOOL COMPANY, Pigeon Cove, Mass.

and upon the result rests success or failure in flying over a long course. This particular process involves a tedious amount of work.

The point toward which all magnetic compasses point is known as the magnetic pole, which is located about 800 miles south of the geographical pole over which Commander Byrd flew last year. In "swinging ship" it is necessary to ascertain the exact angular relation between the fore and aft line of the ship and the compass heading. This operation was done in an unusual manner. In Lindbergh's as in the other ships the exact direction of the magnetic pole was located on the field by transitting the sun to locate the true or geographical pole and thence determining the variation from the true north to the magnetic north. This first point being established, the ship was rolled out to a location where the swinging process began. After the preliminary work was complete, it was a mere matter of pointing the ship in several directions and noting the reading of the compasses.

The other instruments that went to make up the instrument equipment behind which Lindbergh flew were the conventional group of power plant instruments known as the tachometer, indicating engine revolutions; temperature gauge, indicating oil temperature; oil pressure gauge, indicating oil pressure, and the fuel pressure gauge which showed the air pressure that forced the fuel to the carburetor of the motor. The navigational instruments in addition to the compasses were first that inseparable companion to the compasses, the turn indicator, which in itself has no sense of direction but has the peculiar quality of indicating a divergence from a straight line of flight.

It is interesting to note at this point Lindbergh's attitude during some preliminary tests previous to his final trial. On his flight from San Diego to New York via St. Louis he had flown behind a compass that had not been corrected for deviations. After the compasses behind which he was to fly to Paris were adjusted, the sensitivity and accuracy astounded him. It was during this last trial flight that he really respected the possibilities of accurate flying as indicated by the earth inductor compass and its companion, the turn indicator. He had attempted to fly solely by the earth inductor but found himself wandering several degrees either side of his course. A little tip about the turn indicator was all that was necessary to straighten him out and from that time on we have no reason to believe that he kept his eyes away from those two instruments.

GOODRICH TIRES PUT TO SEVERE TEST

WHEN the "Spirit of St. Louis" left the muddy field at Mineola, L. I., the Goodrich Silvertown tires were given the most severe test ever given to airplane tires.

As the machine rolled across the ground slowly gathering up speed, it was necessary for Captain Lindbergh to literally force the machine off the ground. As the machine was gaining flying speed the heavily loaded plane bounded back to the ground in a series of pounding leaps which continued until the plane had gained enough momentum to stay aloft.

With each racking impact on the ground the load on the tires was more than three times the load of the entire ship, that is, the weight on the tires was more than 15,000 pounds, a load, which if not withstood by the tires might have resulted in a serious disaster to the carefully prepared venture.

The fact that the tires withstood the unprecedented punishment is a high tribute to the knowledge of flight conditions evinced by Goodrich engineers.

ERICKSON AIR PHOTOS

AT San Diego wonderful air views of Captain Lindbergh's ship, the "Spirit of St. Louis", were made by H. A. Erickson, the flying photographer. Mr. Erickson specializes in aerial photographs and maps. Many of the pictures taken by him appear on the pages of this issue of AERO DIGEST and many have been published throughout the country, giving an excellent idea of the beautiful appearance of this new Ryan ship.

LATA
TRADE-MARK
BALSA
WOOD
LIGHT AS THE AIR
BALSA WOOD CO., INC. NEW YORK

Used on all RYAN PLANES

Lata Balsa Wood "LIGHT AS AIR" helped wing Captain Charles Lindbergh safely over the Atlantic to Paris, in his record flight of speed and endurance.

The streamline of the 48 foot wingspread on the SPIRIT OF ST. LOUIS were constructed of Lata Balsa Wood, as are all planes manufactured by the Ryan Airlines, Inc.

Speed, distance and safety, those factors which helped Captain Lindbergh put on record one of the greatest feats in aviation were insured by the lightness and enduring qualities of Lata Balsa Wood, used in construction of his New York to Paris plane.

Aeroplane Manufacturers welcome Lata Balsa Wood in plane construction.

Write for Booklet

Spirit of St. Louis
NX211
RYAN
LATA BALSA WOOD Used on Lindbergh's Plane
WESTERN UNION
Received at 11 East 46th Street, New York

NC 200 COLLECT BLUE SAN DIEGO CALIF. 1927 MAY 25 PM 3 19
BALSA WOOD CO. INC.
331 MADISON AVE. 25 950A
BALSA WOOD WAS USED EXCLUSIVELY FOR STREAMLINES ON NEW YORK TO PARIS SHIP IT IS USED ON ALL OUR STANDARD SHIPS . . . . :
RYAN AIR LINES

BALSAWOOD CO.
INCORPORATED
331 MADISON AVE. NEW YORK, N.Y.

Both Captain Lindbergh and the builders of his sturdy Ryan Monoplane deserve the congratulations of the entire world.

The New York to Paris Flight tried to the utmost the endurance of both man and machine.

We are extremely proud that BASS-HUETER VERSATILE SPAR VARNISH provided the necessary protection on surfaces where varnish was used.

Ryan Airlines, Inc. uses BASS-HUETER VERSATILE SPAR VARNISH on all Ryan Airmail Planes.

* * *

BASS-HUETER PAINT CO.
2240 Twenty-fourth St.
San Francisco, Cal.

Lindbergh
the Conqueror!

WHILE the eyes of the entire world are focussed with intense interest on the magnificent daring achievement of Lindbergh in his non-stop flight from New York to Paris, comes this timely, readable and authentic story of man's struggle to conquer the air.

A complete resume of the ambitions, struggles, despairs and triumphs of all those hardy pioneers of space — accurate, non-technical details of air work in the world war, Commander Byrd's trip to the North Pole, Amundsen and Ellsworth's flight across the top of the world. Don't miss this thrilling story of a man's greatest fight against the unknown.

Conquering the Air

by Archibald Williams
A NELSON BOOK
$2.00 at all good book stores

Thos. Nelson & Sons
New York

Enclosed is $ .... for which please send copies of "Conquering the Air".

Name ....

Address ....

We extend our heartiest congratulations to Captain Lindbergh on his demonstration of wonderful airmanship

The builder of the sturdy Ryan Monoplane which stood up under the grueling test specified our SEAMLESS STEEL TUBING.

SERVICE STEEL CO.
1435 Franklin Street Detroit, Mich.
MILL AND WAREHOUSE

Valve Springs and Wire Specialties to order

FISCHER
FLEXIBLE
Tachometer Drive Shaft
was used by
Captain Lindbergh
on New York-Paris Flight
MANUFACTURED BY
THE CHAS. FISCHER SPRING CO.
240 KENT AVE.
BROOKLYN, N. Y.

All lengths Flexible Shafts carried in stock

WEAR A GOLD OR SILVER MINIATURE OF THE SPIRIT OF ST. LOUIS
Commemorative of
CAPTAIN LINDBERGH'S
Famous New York to Paris Flight

These Minatures Are Exact Reproductions in Relief, (1⅝ inches wide.) Made Up as Charms and Pins

SOLID GOLD—CHARM OR PIN $10.00
SILVER " " " 4.00

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Bennett Brothers
429-5th Ave. At 38th St 2nd Floor
175 BROADWAY At CORTLANDT ST. 2nd Floor
NEW YORK

LINDBERGH WELCOMED IN EUROPE

(Continued from page 530)

$25,000 prize, which has spurred on transatlantic flight attempts until its present glorious accomplishment, made a special trip from the Pyrenese to take his greetings to the Captain. His prize will be awarded upon the Captain's return to the United States.

On May 28th, Captain Lindbergh bade farewell to Paris and in the "Spirit of St. Louis" flew to Brussels, where he was received by King Albert of Belgium, who later made a minute examination of the plane.

At London, where he flew on May 29th, he was received by a crowd of 150,000 excited Britishers, who gave him a vociferous welcome. King George set aside all precedent and personally presented the flyer with the rare Air Force Cross, the only other Americans to receive it being the crew of the NC-4 who crossed the Atlantic by way of the Azores. The Prince of Wales, Prime Minister Baldwin and most of Britain's distinguished peerage eagerly congratulated the youthful airman; and the Daily Mail gold aviation cup, instituted by Lord Northcliffe, was presented to him.

As we go to press, elaborate preparations are being made for his return. And soon America will have the opportunity to show her appreciation and homage to the man who has done so much not only for the entire aeronautic industry but for America as a nation.

He has received telegrams of congratulations from emperors, kings, and presidents of nations; millions of dollars for appearing in various stage performances and motion pictures are his for the taking. The world is at his feet—but Lindbergh remains the same unassuming, modest representative of America's highest ideals.

Training gets men ahead in Aviation

Lieut. Walter Hinton

At home, in your spare time, you can learn the fundamentals of Aviation—and start yourself on the way to large earnings

THE recent growth of Aviation is significant. It indicates the kind of expansion that means solidity and permanence—real *commercial* expansion. Mail, express and freight lines are beginning; great factories are building planes by hundreds for pleasure, business and air transportation.

The industry is growing so fast that there is a positive hunger for trained men in all its branches. *But without training, no man is wanted.*

Training combined with grit enabled Capt. Lindbergh to win his recent great victory over space.

Aviation Institute can give you needed training—all the necessary knowledge. It is easily acquired in spare time, at home. All you need is a desire to learn. Lieut. Walter Hinton, of N.C.4 fame, and his staff of experts will guide your instruction from beginning to end. There are many positions open as mail pilots, commercial flyers, instructors, plenty of well paid jobs as inspectors, riggers and mechanics on the field, and any amount of openings in the different factories. But aircraft manufacturers must have trained men. There must be no mistake in the construction of a plane.

On a flying field, men without proper training endanger themselves besides hindering flight instructions and other practical flying work. Aviation is developing too fast to train men by experience.

The Aviation Institute course teaches you everything you need to know, right up to the point of actual flight instruction on the flying field and in the air. All the preliminary work is overcome in a few pleasant hours at home. When you have graduated from the Institute, and received your card, you are ready for the sky. Five to ten hours with an instructor and you can fly *alone*.

In cooperation with the Institute, final flying instructions are given in all parts of the United States.

Congratulations
to
CAPT. CHARLES
LINDBERGH

Aviation Institute of U. S. A. joins the entire civilized world in hearty congratulations to Captain Charles Lindbergh on his great one-man victory of the air.

FREE
This Book Tells All

Get all the facts about the Institute course and the way it leads to Opportunity. Do it now.

AVIATION INSTITUTE OF U. S. A.

Walter Hinton, *President*

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Aviation Institute of U. S. A., Suite 66
71 West 45th St., New York, N. Y.

You may send me without obligation a Free copy of "Aviation and You."

Name..............................

Age..............................

Street..............................

City..................State..........

Fine Work, Captain Lindbergh!

The Wright Aeronautical Company, manufacturers of the engine in "The Spirit of St. Louis," uses Kay and Ess Gray Enamel on the Crankcases of all Whirlwind Engines.

THE KAY & ESS CO.
DAYTON
OHIO

LAMATCO

ONE-EIGHTH inch Lamatco panels made from British Columbia cottonwood were used in Captain Lindbergh's monoplane, THE SPIRIT OF ST. LOUIS.

For lightness, durability and absolute waterproof adhesion LAMATCO British Columbia cottonwood cannot be surpassed.

Laminated Materials Company, Ltd.
Newminster, British Columbia, Canada

DISTRIBUTORS

White Bros.
San Francisco, Cal.

Western Hardwood Lumber Co.
Los Angeles, Cal.

Sullivan Hardwood Lumber Co.
San Diego, Cal.

Laminated Materials Co., Ltd.
50 Congress St., Boston, Mass.

Congratulations Capt. Lindbergh

on accomplishing the greatest flight in history

The fact that he was guided by the B. B. T. Flashing Beacons and landed in Paris by the light of the B. B. T. Air Mail Type Landing Floodlight only increases our pride in being able to play even so microscopic a part in this gigantic achievement.

B.B.T. CORPORATION OF AMERICA

ATLANTIC BUILDING
PHILADELPHIA PENNA.

Captain Charles A. Lindbergh

New York - Paris

Our Springs in Wright Engine

EAGLE BRAND METAL PRODUCTS

We have been highly complimented on the Quality and Durability, especially of our Valve Springs which contributed so greatly to Capt. Lindbergh's safety for Thirty-three and One-half Hours.

MILLER & VAN WINKLE, INC.

18 Bridge St. Brooklyn, N. Y.

THE EXCELLENT *DESIGN* OF THE RYAN
THE INDOMITABLE *WILL* OF LINDBERGH
THE *SPIRIT* OF ST. LOUIS
THE *MATERIALS* OF NICHOLAS-BEAZLEY

The simplest story of
The World's Greatest Flight

NICHOLAS-BEAZLEY AIRPLANE COMPANY, Inc.

MARSHALL MISSOURI

"We ship the same day and will be here tomorrow"

We congratulate Captain Lindbergh on his epochal flight from New York to Paris

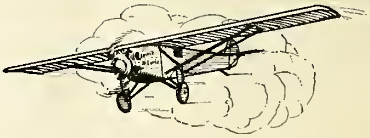
THE Ryan Monoplane which he piloted safely over the 3800 miles of land and open sea carried only necessary equipment.

Carr "Lift-the-Dot" fasteners were installed at the Ryan factory as the most efficient manner of securing seat cushions.

In the Ryan brougham, the standard passenger carrying plane built by this company, Carr "Lift-the-Dot" fasteners are used generously throughout the upholstery.

Makers of "Dot" Fasteners and "Dot" Positive Lubrication Systems.

CARR FASTENER CO. 31 Ames St., Cambridge, Mass.



To Captain Lindbergh and the builders of the Ryan Monoplane in which he flew from New York to Paris, we extend our heartiest congratulations.

WE take pride in announcing that Hercules Glue was used in the construction of Lindbergh's famous plane. Hercules Waterproof Glue is approved by the Government for use in the construction of military aircraft where uniform dependability is absolutely essential.

We also manufacture Veneer Glue for plywood manufacturers.

HERCULES GLUE COMPANY

Pioneers of the Casein Glue Industry

333 FOLSOM STREET SAN FRANCISCO, CALIF.

Captain Lindbergh

YOUR many pilot friends on the West Coast take this occasion to extend their personal greetings to you. When you return to the Pacific Coast we hope to congratulate you personally on your splendid work.

FRANK SAMUELS
Western Representative
AERO DIGEST
1129 MOHAWK STREET
LOS ANGELES, CALIF.

THE SPIRIT OF ST. LOUIS, CAPTAIN LINDBERGH'S FAMOUS PLANE WAS COMPLETELY EQUIPPED WITH OIL AND GASOLINE TANKS AND STREAMLINE COWLING AT OUR SHOPS.

Standard Sheet Metal Works
546-7th Street San Diego, Cal.

Captain Lindbergh's fuel flowed safely through "PARKER" tube couplings. We express our sincere appreciation and gratitude to Captain Lindbergh for his masterful performance.

IN the period of commercial aviation just ahead—when municipalities, corporations, and individuals fully realize the reliability, utility, and economic advantages of present day aircraft in competitive business activities:

When the demand for aircraft strains production facilities and automotive history is eclipsed:

Production and development of "PARKER" tube couplings, fittings and fuel line equipment will keep pace with the demand.

A new catalog fully descriptive of "PARKER" tube couplings and aeronautical fittings is in process—send for your copy.

THE PARKER APPLIANCE COMPANY
CLEVELAND, OHIO

CAPTAIN LINDBERGH!

WE are grateful to you for accomplishing the greatest individual feat of courage and daring in the whole history of aeronautics. As air-minded Americans we are proud that the New York to Paris air trail has been blazed by an American pilot in an American airplane. The manufacturers and those who supply material and services rejoice with us in your outstanding demonstration of progress in the American aircraft industry.

AERO DIGEST
THE MAGAZINE OF THE AIR

AIR—HOT AND OTHERWISE

Three Cheers!!!

Frank A. Tichenor

LAST month we had a word or two to say about the idiocy of putting anyone outside of aviation in charge of the Army Air Corps. General Fechet is the logical man for the job. He ought to be appointed and AERO DIGEST hopes he will be.

His grandfather was of those Huguenots exiled from France and coming to America. Here, having been a surgeon in the French Army, he joined the Northern forces during our Civil War and served with distinction.

His son, father of the present general, was Lieutenant-Colonel Edmond G. Fechet, who was cited for gallant service at Antietam.

General Fechet, the present, was brought up with the Army, living much at the Indian frontier posts at which his father served. He was with his father in Texas during the campaign against Geronimo and during the Sioux Indian War of 1890-91. He lived his boyhood on a horse and the life not only gave him a superb constitution but made him quick to think in emergencies.

He had his education in the public schools of Jackson, Ohio, and then attended the Worthington Academy at Lincoln, Nebraska, and the University of Nebraska.

He enlisted in the Regular Army at the outbreak of the Spanish War, and, probably because he was an expert horseman, joined the Sixth Cavalry, one of the greatest mounted military bodies that the world ever has seen. Severely wounded in the abdomen at San Juan his life was saved by that brilliant surgeon Dr. Nicholas Senn, by an almost magical operation.

He became a second looey in the Ninth Cavalry, that wonderful regiment of colored fighters officered by white men, in 1900, and soon was at the head of a troop, which he commanded for nearly eleven years, some of the time in the Philippines, where he took part in many fights. General Fechet remains a wonder horseman and is one of the crack shots of the nation. He has many trophies. He won the Hale Medal with sixteen consecutive bull's-eyes. Shooting remains his hobby to-day.

Graduating from the Infantry and Cavalry School at Fort Leavenworth in 1904 he was made a Captain in 1911 and served with Pershing's punitive expedition into Mexico from March to September, 1916.

His interest in aviation began with the birth of the science and during the Great War he qualified as a Reserve Military Aviator, taking his flying training at Scott Field, in Illinois. In 1918 he was rated a Junior Military Aviator.

August 5, 1917, he was appointed a temporary Lieutenant Colonel of the Aviation Signal Corps, and was promoted to the rank of Colonel February 26, 1918. His temporary commission ended in 1920 and he became Lieutenant Colonel, but on April 27, 1926, he was appointed Brigadier General of the Air Corps.

During the war he had command at Scott, Carlstron, Dorr and Kelly Fields. From May, 1919, to September, 1920, he served as Department Air Officer of the Southern Department, and was then assigned to duty in the office of the Chief of Air Corps, Washington, where he first acted as Chief of Training and Operations and later as Chief of the Training and War Plans Division serving in all four years. He then became commanding officer of Kelly Field, Texas, but less than a year afterwards his promotion to the rank of Brigadier General took him to Washington as assistant Chief of the Air Corps.

He is really one of the foremost military aviation tacticians.

Fechet as the head of the Army Air Corps would raise the morale of the Air Corps until it set a fine example for all others in the country. His appointment would indicate a policy of progress. It would encourage every man in the Air Corps to do his best to see a man sprung from the ranks made chief.

This is the opportunity of President Coolidge to prove that he believes in giving rewards where they are due. The appointment would mean harmony all down the line. General Fechet knows what we need and how to get it. He is really a genius. We find it impossible to be too emphatic in his praise and our endorsement.

THE All-American Aircraft Show, Washington, May 2nd to 6th. Here was something about aeronautics which was very real and useful, calculated to interest the public in this new art which, in fact, is so important to the public. It was welcome.

Going through the Aircraft Exhibit at Washington, the spectators found more things to inspire confidence in aviation as a human life utility than all the trans-ocean and North Pole flights that ever will be flown. We need such things in America. In Europe attention has been given rather to commercial flying than to stunts. Here, in the United States, far more attention has been given to stunts than to commercial flying. Is it the American spirit of adventure? If so, good. That spirit of adventure has high value. But we don't want the traveling public to regard air transport as an adventure at all. We want them to regard it as a utility, as they look upon railways and even trolley cars.

Stunts have their value. They advertise the fact that men can fly. In military aeronautics, they help. The emergencies of fighting may call for stunts at crucial moments. But in commercial aviation, they are less valuable. Whether in the long run they are worth the risk of life and the expenditure of money is a point upon which men disagree.

General Duval, a great French expert in aviation, has issued a public statement deploring the Atlantic crossing stunts. He says they advance neither sports nor science and that they surely do not advance commercial aviation. We do not wholly agree with him, but we know that if America is to have commercial aviation, we must not let our attention be too much distracted. That stunts cost high in lives and money is tragically obvious. Careful commercial flying can be safe and can be profitable to everyone concerned. That is the goal at which the American industry should aim.

Even in view of the glorious triumph of young Lindbergh, one sentence of the General's statement lingers in the memory. "That the crowds of two continents should be passionately roused into a fever of excitement by the possibility as to whether an airman is to succeed and live, or fail and die, is both immoral and inefficient."

To consider aviation as a sport the General thinks is wrong. "It is fundamentlly wrong," he says. "That the death of brave men is the almost inevitable consequence of failure is a barbaric conception of sport which takes us back to the dark ages."

This was written after Nungesser had been reported missing. France was shuddering. (*Continued on page 624*)

AERO DIGEST

Published Monthly
THE AERONAUTICAL DIGEST PUBLISHING CORPORATION
220 WEST 42nd STREET
NEW YORK

Vol. 10 JUNE, 1927 No. 6

'RAY FOR LINDY!

IN the history of the world there has never been anything which appealed to the imagination of its inhabitants as the Lindbergh New York to Paris flight. Nor has there ever been such a demonstration of gallant, dauntless courage as portrayed by this modern Icarus—Captain Charles A. Lindbergh.

A doer, not a talker—there can be only admiration for the smiling, modest king of fliers. Without the blaze or flare of personal exploitation or press agentry, silent as the setting sun that hides its splendour and brilliancy in the evening shadows of the western sky, came this youthful conqueror of the elements, the ocean, yes and even time itself.

To him the flight was not an unusual adventure. He had confidence in his plane and engine. With his rare experience the unusual would have been if he had not been able to put it down on the field at Le Bourget.

Never has there been such an intensity of interest in an adventure fraught with perils. With the eyes of the entire world on him, Captain Lindbergh remained the calm, cool U. S. mail pilot trained to see that "neither snow, nor rain, nor heat, nor gloom of night stops these couriers from the safe completion of their flight."

The message he carried to France has done more to reestablish friendly relations between this country and the peoples of other nations than the combined efforts of our entire diplomatic service in the ten years since the great war.

The most human thing Lindbergh said about his flight was that at one time he thought of turning back. So after all really he is not a super man—he deserves far greater praise. He is like the rest of us—and still did it!

The glory of his achievement is doubled by the fact that in making it he not only had to lick the Atlantic Ocean but had also to lick Lindbergh.

The greatest triumphs of great men always have included victories over themselves.

No combination of words will ever be found that will fully describe this magnificent achievement.

NUNGESSER-COLI RESCUE ENDEAVOR

DANIEL GUGGENHEIM is one of the chief assets of American aviation. The man who made New York University's School of Aeronautics possible by liberally endowing it now has made a further gift which in another way will do as much to serve the cause. This marks Mr. Guggenheim as the complete friend of the art of flying, for while the enterprise first named was of the head, this second is of the heart.

When Aero Digest suggested that the spirit of America requires every effort to be made to find Nungesser and Coli, the French airmen who gallantly set off to try the transatlantic flight but vanished into mystery, Mr. Guggenheim immediately responded with a check for $25,000, thus forming a fund to be administered by Frank A. Tichenor as trustee in searching for the missing Frenchmen.

In consequence those famous flyers, F. Sidney Cotton and Cy Caldwell, splendidly equipped, are on the way, as we go to press, to comb the wilderness of Newfoundland for the gallant Frenchmen who dared so intrepidly but did not fare so well as our own amazing Lindbergh.

Such spirit as that of Mr. Guggenheim will give momentum to that impulse which we must continually stimulate if we of the United States are to become, as of course we must, supreme in the air. France marvelously acclaimed our winning venturer; we sympathetically, competently pay the only tribute that is possible to her two dauntless venturers into the unknown.

May Mr. Guggenheim's magnificent generosity result in the rescue by America of these heroes of France!

Even if they tragically have perished so earnest an attempt upon the part of citizens of the United States to succor them will be accepted as a glorious endeavor of fraternity and admiration—as a tribute from all Americans to the lofty spirit of our sister Republic.

GET BUSY!

THE Air Industry must unite to get the right representation in Washington. That is not only vital in its interests but to the national defense and national commerce. Members of Congress act in what they think is full accord with the wishes of the folks back home. Every Congressman is swayed by the preferences of his own district with regard to any bill. America's air industry has not remembered this. All others have.

No matter what your personal feelings may be with regard to any specific piece of legislation they will not count unless you find means of competently expressing them so that individual Congressmen and Congress as a whole will know of them.

We stand and wonder in this country why commercial aviation does not advance. We in the air game, when we are disappointed, are like voters who get bad representation because they don't vote at the primaries.

Let's not be that way. Let's organize—and the time to organize is NOW.

Get your newspapers on the job. Then your Congressman with startled chin raised will look up into the air!

Instead of growling because you have no aviation in your town, start a movement for the building and equipment of a landing field. Enough planes are flying now so that if you had a field, many would stop. This would educate your community. Presently it would find itself in line for the air mail and that would mean dollars to your business men. Aviators wear shoes, shirts, collars and even socks. Why shouldn't your stores sell them some of their requirements? They eat, they smoke, they seek amusement.

Landing fields always become centers of interest and therefore centers of business activity. At a field 30 miles from New York, one good day brought $1,600 to the planes for flying fees. Over thirty thousand people visited that field on one Sunday afternoon. They had to buy gas, hot dogs and even hotel dinners. Those 30,000 people scattered money from one end of Long Island to the other. Let your community be abreast of the times. That's the best way to get air travel.

A NOD AND A WINK

At the U. S. Fleet, Fort Jay, The N. A. A., Myself And Other Quaint Relics

By

Cy Caldwell

TAKE a hitch at your trousers, you six readers—including the one in Champaign, Illinois—get a nautical roll into your walk, and burst forth into the old deep-sea chantey, "Yo, ho, ho! And a bottle of rum."—or "Yo, ho, ho, and a can of alcohol," as this is America of the Volstead Period—for shiver my timbers, lads, if this here isn't the nautical number of this feeble-minded column. I'll tell you what, me lads, I'm so full of sea topics that my scuppers are awash—and if a cod happened to see me just now he'd swim over and kiss me. I'm practically submerged in naval matters—I'm all wet, as the saying goes.

So I'm going to take aboard a tot of rum, and give you lads a little sniff of sea air, which is especially salubrious at this time of year—may I be keel-hauled if it isn't. I'm sniffing the sea air myself, right now, as I scribble. It's slightly tainted, I'll admit, as it happens to be blowing off the Hudson River—and there are lots of things besides Romance floating on the broad bosom of the noble Hudson, rest assured of that. For one thing, there's what is called by courtesy the U. S. Battle Fleet—which is pure politeness on the part of someone, for it has never been in a battle. And for another thing that's floating in the Hudson, I'll mention the sewage from Yonkers.

So you can appreciate that the salt sea air encounters quite a bit of competition when it follows the tide this far inland and blows past a little wharf at Riverside, where Mrs. Cy and I are sitting as I collect my water-soaked thoughts and lay them out on this paper to dry. I may as well give you a little pen-picture of us two, entitled "Life Among the Wets," so you'll realize how the other half of the world lives—how the lower order of mammals, such as writers, puts in its time. It's a picture from life's other side, soaks—a little soft music from the radio would be appropriate just here, but if the Salvation Army happens to be going past, ask them to pause and toot a few sad sweet notes. And I don't mind your crying at this, but don't sniff or snuff—I hate sniffling and snuffling.

Mrs. Cy has a sketch pad on her knee. She's a very fine sketcher—you can tell what it was she was sketching, most of the time. She's a futurist artist, just as I am a futurist writer. Both of us have a brilliant future ahead of us—we've been trying to catch up with it for years, but no matter. At this minute she is sketching mine-layer No. 21 which is lying out in the stream, and she is listening to a very handsome sailor lad from the fleet who is standing beside her. That is, he's standing, but I have no doubt he is lying—you know sailors. She's sketching away, looking up at that sailor and smiling encouragingly. I guess after listening to me for seven years she finds the sailor a welcome change.

I'm over at the other end of the wharf—and as she and that sailor haven't even looked my way once—and they've been talking for over an hour—I guess she hasn't thought it necessary to inform him of that tactical error she made seven years ago. I don't think the sailor suspects that I'm even distantly related to her. Well, I don't care; the fleet only comes here once a year. Just as well, I guess.

However, I am not alone. My good old pal, Al. K. Hall, mixed with ginger ale, is with me. So I'm as merry as a cricket, and just in the mood to sit down and chat with you six readers about the great U. S. Navy, part of which is floating mistily before me, against the green and brown background of the Palisades. There are a couple of mine-layers in sight, the repair ship *Shawmut*, destroyer No. 102, a transport, and a white hospital ship. In case of a war with any power well supplied with bombing planes, that hospital ship is the only one of the lot I'd care to go to sea in. I figure the enemy wouldn't have the heart to sink that one—but I have a pretty fair idea of what's going to happen to the others. I guess the Navy has, too, for I notice that all the boat crews in the launches are wearing life-preservers, which would indicate that the Navy believes its crews are all going to fall into the water some time or other. And if they don't fall in, someone is liable to push them in, or knock the boat out from under them, or something. Anyhow, as they are all wearing cork jackets, it seems like an admission from the High Command that they expect the boys, sooner or later, to have nothing under their feet but fish and water—the boat having been neatly removed, and sent down with the anchor. I hear they're going to make all the anchors out of wood, so that in the next naval war the anchors at least will float.

You know, of course, that this fleet had visited New York? And you've heard, too, how the Navy uses airplanes with the fleet? Well, I went down to the Battery the other morning—that's the place where the New York gunmen park their tools, you know—and I saw the fleet steam in to port. I'd read in the papers that "the scouting airplanes of the fleet would convoy it to its anchorage in the Hudson," and I was curious to see the great aerial forces of this magnificent Navy blotting out the sun with their numbers.

Of course, I knew that the Navy had bought millions of dollars' worth of aircraft, some of which could fly, so I looked for a pretty brilliant display. I knew, naturally, that I wouldn't see any of the M. O. I.'s, for the last word I had about the Navy's million dollars' worth of M. O.'s—which I had flight-tested myself at Cleveland—was that "they were ageing in the wood" at Hampton Roads. Which means that they were sitting in a hangar growing old. And I knew also that some S C 2's—which I also had tested—would be among the missing, for the engines had fallen out of some of them, and they had never flown very snappily, even with the engines.

However, even with these morgue-defying creations out of the running—or "out of the crawling" would, perhaps, express it better—I figured that the Navy would be able to put up quite a galaxy of aircraft, seeing that they were coming around to show the taxpayers what had happened to all their money. So when the papers announced this grand aerial display, I wouldn't have missed it for two dollars. In fact, knowing all that had been spent on aircraft, I felt safe in doing a little bragging about it to a couple of English friends—an old war pal of mine and his father—who happened to be visiting me. I told them about the bold fight for aviation that Admiral Moffatt and his flying personnel in the Bureau of Aeronautics had put up, and that they had made

(Continued on page 620)

The FLIGHT SCHOOL

By

Lieutenant Barrett Studley, U.S.N.

CIVIL aviation, both commercial and private, is to-day expanding rapidly. With this expansion the importance of the modern flight school must increase proportionately. The demand for trained commercial pilots is growing, while more and more people are looking toward flying as a sport. It is in flight schools that the training necessary to handle a plane competently must be secured.

The operation of these schools is of vital concern, not only to the student himself, but to everyone interested in aviation. For on their effectiveness depends the safety of the man who is learning to fly. He begins his training ignorant of the requirements of the air. He can learn only what he is taught. If any vital part of his training is overlooked, he takes an unnecessary risk every time he steps into a plane. Though flying is safe for the experienced pilot, aviation can rest on an entirely sound basis only when it is also safe for the student.

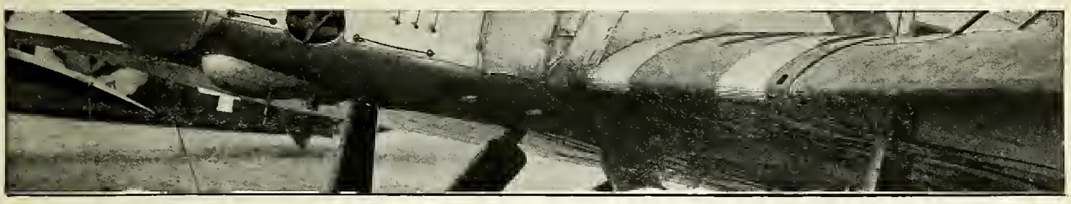
The manufacturer of planes for private use is in particular peculiarly interested in the problem of flight training, for it is intimately bound up with the future of his business. His distribution problem varies in one vital respect from that of the automobile manufacturer. Almost any adult American can walk into a sales agency, buy a car, and drive off in it. But not one man in a thousand is a qualified pilot. Between an airplane on the floor of a salesroom and the same plane safely flown by anyone not now a pilot, there is a vital connecting link—the flight school.

It is this market which must be the basis for any contemplated large-scale production of private planes. The number of pilots now flying who would purchase such planes is limited. But there are thousands of keenly intelligent men who, offered a reliable plane at a moderate price with the assurance of training made safe by scientific organization, would be strongly tempted by the call of the air. The success of students of the present and immediate future will affect largely the number of such men who become interested in flying. For every student who, half-trained and ill prepared, wrecks his plane on an early solo flight, ten other prospective purchasers may be discouraged. But the man who completes an adequate course of training and becomes a competent pilot may interest a dozen others in aviation. "How do I go about learning to fly the thing?" is a question that every airplane distributor must be ready to answer. If he says, "Go to this Flight School," he must know, if the sale is to be a sound one, that the training given by that school is the best that can be had. The man who wants to sell planes must be sure that the people who buy them also learn to fly them.

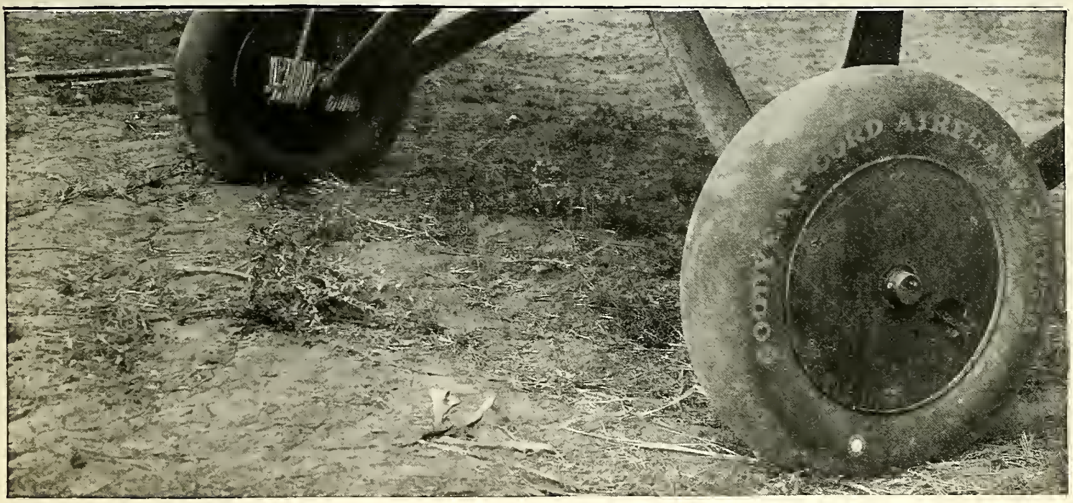
A training plane entering a loop.

The successful modern flight school must be operated in accordance with two fundamental principles: (1) organization of training on the basis of past experience; (2) selection of students. These will be considered successively.

Flight training has been carried on under the assumption that any competent pilot is also a competent instructor. Flying ability has been considered the sole qualification for training work. But an examination of actual past experience will show



TO HELP YOU DOWN AND UP AGAIN



IMAGINE—dropping an automobile on two wheels! Yet airplane tires take that, perhaps many times a day. Even a perfect 3-point landing gives the tires two-thirds of the job, and more than that when the eye is bad or the field worse.

So, from the word "Contact" back to the hangar you must have tires that will help you down and then help you up again. Goodyear Airplane Tires do both. They roll easily and smoothly over soft or lumpy ground. And they'll be sound and buoyant when you level out for the finish.

Goodyear Airplane Tires are made to fit the weight and character of the ship; to stand the gaff of "Emergency Fields" and be ready for work in the morning.

The very best materials, and an experience older than aviation, go into every Goodyear Airplane Tire. And into every other airplane part that Goodyear makes.

Aeronautics Department
THE GOODYEAR TIRE AND RUBBER COMPANY, INC., AKRON, OHIO

GOODYEAR

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AIRPLANE TIRES

this assumption to be unwarranted. The fact is that a good pilot is not necessarily a good instructor.

There is nothing surprising in this. The practising physician does not step into a chair in a medical school without some preparation for instruction work, nor does the trial lawyer teach classes in a law school between cases. Neither can the operating pilot be expected to become a capable instructor merely by the act of climbing into the cockpit of a training plane. He can give effective instruction after comparatively brief preparation. But the technique of flight training is not to be learned in a day, regardless of the number of hours in the air a man has.

Nearing the top of a loop.

Space does not permit a full discussion here of the instructor's work. But it may be said briefly that instruction is divided into analysis and correction. It can be assumed that the student has a theoretical knowledge of flying before commencing dual work. The first objective is then to analyze his errors. Some unexpected difficulty is here encountered by the new instructor. His own handling of the plane has become instinctive, and he has moreover become sensitive to the feel of it largely through the controls. He must now not only analyze the effects of individual control movements, but must do so without touching the stick himself. And in addition he must determine whether the student's mistakes are merely errors incident to normal progress, or whether they are due to fundamental misunderstandings. A case recently came under the writer's observation in which a student went through an entire ten hour dual period hampered by a serious misconception that was not corrected by the instructor.

After the student's errors have been analyzed, it is then necessary, not merely to explain them to him, but to show him how to correct them. He must of course understand the principles involved. But this alone is not sufficient. The instructor who stops with explanation is not completing his work. He produces actual results only when the student's mistakes diminish steadily in number and magnitude.

Much has been learned about the most effective methods of teaching students to correct or avoid common errors. It is the responsibility of the flight school to make all such information available for the use of all of its instructors. Time in the air is expensive, and none of it should be wasted by ineffective training methods. If such waste is to be avoided, the experience of the past must be utilized to the fullest extent. Older instructors would learn nothing fundamentally new in this way, though even after years of instructing a pilot now and then runs across a new idea of value to him. But pilots commencing instruction flying might double the effectiveness of their early work by careful study of tried and proven methods. The idea of a course of training for instructors offers a fruitful field for thought.

The second basic principle underlying the operation of the modern flight school is selection. It is a definitely established fact that not all men can fly safely. The flight school cannot escape the responsibility of separating those who can from those who cannot. Nor does one successful solo flight discharge this obligation. It is quite possible for a student to fly without accident for a considerable period when any experienced instructor can state definitely that sooner or later he will inevitably crash. One student of unsatisfactory aptitude flew safely for a year before he spun in and killed his passenger.

Here again experience is essential. The probable future performance of any student can be estimated only on the basis of the past performances of other students. But sufficient data has been accumulated so that the work of each individual can be graded with considerable accuracy. Mathematical precision of measurement is of course impossible, and hence there must be a certain number of doubtful cases. But aften ten hours of dual work the great majority of students can be definitely classified as satisfactory or unsatisfactory in aptitude.

The standards of military and naval flight schools now eliminate during training all students of doubtful aptitude. The civilian school is in a somewhat different position, as it must act in an advisory rather than in an authoritative capacity. Yet the same standards can be applied. Their application is in fact essential to the maintenance of flight instruction as a responsible profession, for the instructor must here act in a capacity similar to that of the physician who makes a physical examination. The student is entirely dependent on the latter for an opinion as to his physical qualifications for fly-

(Cont. on p.625)

The Consolidated training plane approaching over a group of trees.

ANNOUNCING A NEW FLYING COURSE BY CURTISS FLYING SERVICE, INC.

CURTISS Flying Service, Inc. is now prepared to offer to a limited number of specially qualified students, a new type of flying course, designed particularly for those who intend to follow flying as a profession.

Through cooperation of the U. S. Army Air Corps, graduates of this course will be accepted as Reserve officers and be permitted to fly government aircraft at no expense to themselves. Thus they can rapidly fit themselves for positions as licensed commercial pilots.

Enrollment is limited and will be confined to R. O. T. C. graduates and men with college educations or the equivalent.

Further information will be furnished upon request. Applicants should state clearly their educational qualifications to avoid misunderstandings.

IN ADDITION

We are continuing to offer our standard ten-hour flying course which has started many famous pilots on the way to aeronautical success. Over 500 students have graduated from this course since 1919.

Curtiss Flying Service students are trained by the oldest organization in the world, operating one of the busiest airports in the United States. Our equipment and personnel are licensed by the United States Department of Commerce.

"Flying time is here"

CURTISS FLYING SERVICE, INC.
Clinton Road, Garden City, N. Y.

"LEARN TO FLY"

Synopses of Flying Schools of the United States

(Continued from the May issue)

AERO CORPORATION OF CALIF. FLYING SCHOOL
Los Angeles, California

A COMPLETE course of instruction is offered for $250, covering both flying and ground training. Separate flying lessons are given at $20 per hour flying time.

The flying instruction consists of not less than fifteen hours dual instruction in the air, more if necessary, and includes a full course in acrobatics, dead stick landings, side slips, landings in short and unaccustomed fields and about one-hour of cross-country flight, fitting the student for Private pilot license. After completion of the course the student is given use of a ship for one hour for his solo flight, after which time a ship is rented to him on a basis of $15 per hour as a means for him to acquire his necessary solo experience. Ground instruction is given in the shops during the day and two evenings a week are devoted to theory of aerodynamics, plane types and structures, motor types and operation, and instruments.

The school has been operating since February, 1926, as Aero Corporation of California; from November, 1923, to February, 1926, as Burdett Airport.

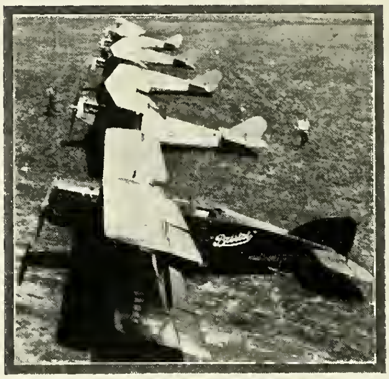
As the school is in the city of Los Angeles, excellent room and board for students can be secured within a few blocks of the field at from $40 per month up.

Five ships are used for instruction; Curtiss JN4Ds and Alexander Eaglerocks.

The present enrollment is 63; 153 pupils have trained since starting. Three flying instructors; two technical ground instructors.

The Aero Corporation of California field is located at 99th and South Western Avenue, Los Angeles, on forty acres leased from the city. Its position is easily found on the southwestern edge of Los Angeles by a large black water storage tank belonging to the city and located on the property. Field is 1600 feet long and good in all weather; complete facilities are maintained for service and repair on all types of aircraft day or night. Transportation to the city is always available

The corporation operates a commercial flying service and distributes Alexander Eaglerock planes.



Planes at the "Speed" Johnson Airport.

"SPEED" JOHNSON'S FLYING SCHOOL
San Mateo, California

THE cost of the course is $350. Special students are taken at $20 an hour. The course consists of: Care, overhauling, repairing and cleaning of ships and motors; ground work; flying with instructors until qualified to do so; then about 9 hours solo. They guarantee to teach the pupil to fly and to obtain a F. A. I. license. Every student gets from 18 to 21 hours before finishing the course.

The school has been operating since 1914.

Students may live in San Mateo or San Francisco or any other adjoining town as there are three means of transportation: train, street car and motor bus.

Three newly covered and overhauled JN4Ds are used for training.

At present there are eight students; two instructors; 300 pupils have trained.

The flying field is located at Beresford Station, two miles from San Mateo, and sixteen miles from San Francisco.

The field is 2500 x 2100 feet. Flying conditions are ideal, the field being used every day in the year. Hangar space for eight ships. Oil, gas, supplies, and repairs are obtainable at any and all times. A commercial flying service is also operated.

EAGLE AIRPORT SCHOOL OF AVIATION
Hinckley, Illinois

THIS school, which has been in operation for the past two and a half years, maintains a regular course of instruction and has graduated to date 37 students. The tuition fee for instruction is $200, or $15 per hour.

The 30-acre field is rectangular with good approaches on all sides. Any type of plane can land with ample room to spare. Gas, oil and refreshments are on the field, with supplies to reconstruct any modern airplane.

Air King ships are used for training. The Eagle Airport Air-King Sales Service, which operates the school, are distributors for Air King planes and operate a commercial flying service.

SWEENEY AVIATION SCHOOL
Kansas City, Missouri

THE training is all practical training on actual equipment. The Sweeney Automotive School has been in operation nineteen years and the Aviation School for over two years.

The price of the ground course, including airplane building, aero motors, aero navigation, meteorology, etc., is $150. The cost of flying instruction at Sweeney Airport is $250. The combined instruction of the ground course and flying is $350.

Jobs are secured for students desiring to earn while learning.

The Sweeney School has its own dormitories, restaurant, drug store, haberdashery in its own building, for students who want these facilities. The cost of board and room is low—from $8 to $9 a week.

The school has had seven hundred graduates—has eleven ships and nineteen instructors.

Sweeney Airport, the school's private flying field, is ideally located, only ten minutes from the school. It consists of 138 acres level, solid ground with all weather runways.

The Sweeney School also operates the "Sweeney 'Fly It Yourself'" service, by which students may rent planes at a low hourly fee to solo for pilot's license.

The student is allowed eleven hours of flying. Additional solo hours desired may be had at low cost.

(*Continued on page* 568)

Students come from all over the United States to take their training at the Sweeney Aviation School.

You can earn $100 to $400 weekly. Thousands of red-blooded men are needed in all lines of aviation right NOW. Train yourself for future success in one of these aviation jobs.

AVIATORS
$75 to $300 WEEKLY

AVIATION MECHANICS
$50 to $150 WEEKLY

AERONAUTICAL INSTRUCTORS
$75 to $250 WEEKLY

AIRPLANE BUILDERS
$75 to $250 WEEKLY

AERIAL PHOTOGRAPHY
$100 to $300 WEEKLY

AERIAL ADVERTISING
$50 to $250 WEEKLY

AND NUMEROUS OTHER POSITIONS

AVIATION IS BOOMING!

Learn to Fly in 1927

FLIGHTS of every description, cross country, across the Atlantic, around the world flying commands the attention of all nations.

Everywhere, everyone can note the spontaneous interest shown in the growth of aviation.

The largest and best equipped commercial aviation school in the United States offers YOU an opportunity to enter its ranks and qualify for Big Pay jobs in this fascinating profession. We will train you at home and give you your Final training, if you desire, at our airport in Chicago.

335 STUDENTS
actively enrolled in our course
TODAY

A $10 down payment enrolls YOU!

MAKE AN AVIATOR'S DECISION
DECIDE NOW!
MAIL THIS COUPON TO-DAY!

CHICAGO AERONAUTICAL SERVICE
608 SOUTH DEARBORN STREET, CHICAGO, ILL.
INC.

Operators of the largest and best equipped commercial aviation training school in the U. S.

Aerial Photography
Aerial Mapping
Flying Instruction
Aerial Survey
Aerial Advertising
Passenger Service

Chicago Aeronautical Service, Incorporated,
Dept. K, 608 S. Dearborn St., Chicago, Ill.

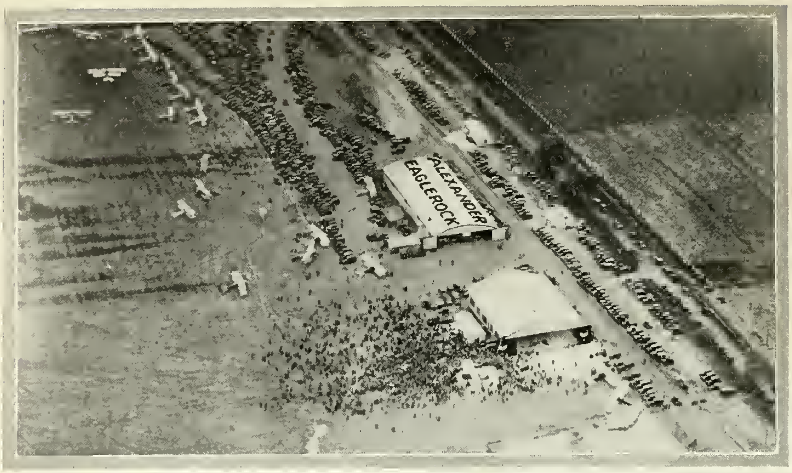
Without any obligation send me Free Booklet about your "Home course in Aeronautics". Also information about practical Ground School and Actual Flying.

Name ....

Address ....

City ....State ....

Mark X here—and enclose $10 enrollment fee if you desire to start at once. You will receive the first Lessons by return mail.



A busy day at Richard's Field—Bennett Flying School hangar in center.

BENNETT FLYING SCHOOL

Richard's Field, Kansas City, Missouri

INSTRUCTION consists of 14 hours' dual instruction, with 1 hour solo. Each student is given at least 5 hours of cross-country and map reading, as the school considers it is just as essential for a student to learn to fly cross-country as to solo. The student maps his own course, selects his own landing field, in fact, does everything that is necessary for a cross-country flight without instructions or corrections from the instructor, except in case the student selects a poor landing field or otherwise gets so far off the course as to be unlikely to arrive at his destination. This feature lends confidence to the student.

Students can obtain board and room either in Kansas City or Raytown, Mo. at $7 to $8 per week. Employment may be obtained in Kansas City to defray living expenses while taking the course.

Training is done on new Eaglerock planes, two of which are on the field at the present time, with more on order.

Fifteen students are taking the course now, with four instructors; fifteen pupils have trained since starting.

Richard's Field, 160 acres, which is under Government control and used by Army and Air Mail, is the school's airport. It is 10 miles from the heart of the city, but has bus transportation. Free transportation for students is furnished to and from the field.

By June 30 of this year, the school will move to a new 700-acre field, about a mile from the Kansas City Post Office.

The Bennett Eagle Rock Sales Co., which runs the school, also distributes Eaglerocks and does commercial flying.

LOOMIS FLYING SCHOOL

Binghamton, New York

COMPLETE ground and flying course is given for $200. The school has been operating for three years.

One instructor is employed.

Two ships are used; one special side-by-side dual training plane.

The flying field is located two miles east of the city. Living facilities are good.

The Loomis Aircraft Company also operates a commercial flying service.

ESSINGTON SCHOOL OF AVIATION

Essington, Pennsylvania

THE tuition fee for instruction is $300. Instruction consists of enough dual training for safe solo flying—either land or water and F. A. I. certificate. The school has been in operation since 1915. One hundred and fifty students have been trained. During the winter season the school is closed.

Room and board may be obtained at hotels or boarding houses from $10 up per week.

Four training planes are used—JN4D, Curtiss MF, Waco-9 seaplane and Waco land plane.

The seaplane base is on the Delaware River at Essington; land flying at Philadelphia Airport. Regular commercial flying service is also operated by the school.

MIAMI FLYING SCHOOL

Miami, Oklahoma

THE average cost of instruction, consisting of air and ground work, is $200.

The school has been operating for one year and a half. Eight students have been trained; eight are now taking the course; one instructor is employed.

Good living facilities are available for students.

JN4Ds, Standards and Wacos are used for instruction.

The flying field is 1300 by 2500 feet, three and one-half miles north of Miami. Commercial flying service is also operated by the Miami Aircraft Company.

BERTRAM AIRCRAFT FLYING SCHOOL

Towner, North Dakota

GROUND and flying instruction are given at an average cost of $200 for the course.

The school has been in operation one year; has three students now; one graduate student; one instructor.

Living facilities for student's are good.

Two ships are used—Canuck and Standard.

The 116-acre flying field is located one mile from town.

A commercial service is also conducted by the Bertram Aircraft Company.

VARNEY SCHOOL OF FLIGHT

*Airport of Peoria, **Peoria, Ill.***

THE Varney School of Flight is operated by the Varney Aircraft Company, who are operating on Peoria's new municipal, commercial and air mail, airport. This school has been in operation for the past six years. Over 250 students have been trained and they expect to train well over 100 students this coming season.

There are four individual courses of instruction, ranging in price from $150 to $350. The average student takes the 15-hour course which costs $275. In addition to the flying courses there is a course in applied airplane mechanics which is priced at $100, and a home study course, at $10.

The school is equipped with dormitories for the students and restaurant for students and visiting flyers. Students receive excellent room and board for $8 a week at the school.

A new shop has just been finished with 1500 square feet floor space.

Students with special ability are often given employment at the airport so that they may earn their tuition.

In addition to the preliminary flying course, students are also given night flying, cross-country, meteorology, engine and plane construction, repair and navigation.

The school has special courses for flyers who wish to brush up on their flying time. Students not wishing to take any of the regular courses may take instruction by the hour at $25 per hour.

The Varney Aircraft Company are dealers in airplanes, motors and supplies and operate a commercial flying service.

(*Continued on page* 570)

Varney School of Flight students and mechanics.

AIRPLANES

MOST all of the Standard J1 airplanes (numbering 452) were concentrated at Camp Logan, Houston, Texas. We were fortunate in purchasing half of these Standards and from time to time have shipped them up to our St. Louis warehouse in carload lots.

These airplanes were constructed during the war period. All were brand new in original crates, but we have taken them out of the crates and rebuilt the fuselages from nose to tail installing all new longerons, instrument boards, new seats, new landing gears, etc. We also reconstruct the wings and give them a thorough inspection and recover the entire ship with new fabric. We use six coats of freshly manufactured Nitrate dope, and the entire ship has the natural color finish. The aluminum cowls are painted a light blue, and this combination makes a very neat appearing ship. All of our airplanes are constructed in such a way that we guarantee them to pass the Government test. Each airplane is carefully inspected and given a severe test flight before we make delivery.

We invite you to come to St. Louis and go through our shops. We feel sure you will agree with the rest of our customers who have gone through our shops that this is the only company in the country which is actually rebuilding Standard airplanes as they should be built.

We sold 83 of these Standards last year, and a large percentage of them were powered with the OX5 motor. All of the fuselages are reconditioned so as to accommodate two passengers in the front seat and a pilot in the rear. The Standard airplane with OX5 motor installed will carry one passenger in the front seat and a pilot in the rear; with the Curtiss OXX6 100 h. p. motor, the Hispano Suiza 150 h. p. motor or the Curtiss K-6 motor of 150 h. p. the ship will carry two passengers in the front seat and a pilot in the rear.

NEW STANDARD J1 AIRPLANES

without motor; fuselage and tail members uncovered	$650
completely covered, set up, but without motor	750
with Government overhauled OX5 motor installed, 2-place ship—(our best seller)	900
with absolutely new OX5 motor installed	1200
with brand new Curtiss OXX6 100 h.p. motor, 3-place	1300
with Government overhauled OXX6 100 h.p. motor 3-place	1200
with guaranteed overhauled Model A Hispano Suiza 150 h.p. motor, 3-place ship	1350
with guaranteed overhauled model I, 150 h.p. Hispano Suiza motor installed, 3-place	1500
with guaranteed overhauled Model E, 180 h.p. Hispano Suiza motor installed, 3-place	1500

We have a few used Standard J1 airplanes with motors at **$650** ready to fly away in good airworthy condition.

NEW CURTISS ORIOLES

3-place, without motor	$1750
with Curtiss K-6 motor 150 h.p. installed, 3-place	2000
with practically new Hispano Suiza model E, 180 h.p. motor installed, 3-place	2000

DE HAVILLANDS

Completely reconditioned, wings and tail members recovered, less motor	$1000
with guaranteed overhauled Liberty motor	3000
with brand new Liberty motor	7500

THOMAS-MORSE AND SPAD SCOUTS

TM Scout, complete with new 80 h.p. Le-Rhone motor installed	$650
TM, Complete with 0X5 motor	1000
Spad scout, (which we consider much better than the TM, or TM Scout, as it has better performance, and is constructed much better) less motor	200

These Spad airplanes are fast single seater scout planes. They are in good condition but need recovering. Some of the wings need minor repairs. To close these out we are selling them at what they cost us. The motor mounting is for the 150 h.p. Hispano Suiza motor, but can be changed over to accommodate the OX5 motor planes crated f.o.b. cars at our warehouse at San Antonio, Texas.

CURTISS JN AIRPLANES

Reconditioned JN4D, with guaranteed overhauled OX5 motor	$750
without motor	500
with Hispano Suiza motor installed	1250
Reconditioned and recovered Canuck, with guaranteed overhauled OX5 motor	900
with brand new OX5 motor installed	1200
Special built Canuck with all lower wings finished in pigmented aluminum, blue cowls, that flew about 20 hours, a bargain at	1000

Write for free catalogue of our Flying School

ROBERTSON AIRCRAFT CORPORATION

OPERATORS OF UNITED STATES AIR MAIL ST. LOUIS - CHICAGO

LAMBERT-ST. LOUIS FLYING FIELD, ANGLUM, MO.

A group of students at the Alexander Aircraft Flying School.

ALEXANDER AIRCRAFT FLYING SCHOOL

Alexander Airport, Denver, Colo.

COST of instruction is $10 per hour, with a minimum of five hours, covering everything including gas and oil. This price is fixed whether for dual or solo time.

The school endeavors to give the students the correct knowledge and fundamental habits to eventually become professional pilots. Special stress is put upon the difference between skidding and proper flying and the making of correct turns. Before soloing, the student is taught maximum climbs, stalled flight, tail spins and vertical banks.

The average man will solo under this system in 8 to 10 hours. However, no one can be a finished pilot with that experience. The Alexander Company recommends that the student take 20 hours. In that time he can be through aerobatics, practiced in stalled flight, taught not to skid and have the foundation to become an F. A. I. pilot. This course of 20 hours has a total cost of $200.

A ground course is optional, consisting of a series of lectures on airplanes, motors, navigation, meteorology and air commerce rules.

Alexander Eaglerock planes are used for instruction.

At present two instructors are on duty. Twelve students are taking the course.

Transportation to and from the field may be had with the field crew. The factory is located in Englewood, a suburb of Denver.

The Alexander Aircraft Company designs and builds planes and operates commercial aerial service.

LU-THE FLYING SERVICE

Jackson, Michigan

AVERAGE cost of course is $175. Instruction consists of about 10 hours' flying time, rigging care and maintenance of ships and motors.

The school has been operating two seasons. Living facilities may be obtained in Jackson, with bus line service every hour.

Two ships are used—Jenny and Waco.

Ten students are taking the course; eighteen have been trained since starting. One instructor is employed with extra instructor part time.

The flying field — Lu-The Airport—is slightly rolling light soil in fine condition most of year. It is located five miles east of Jackson on highway M. 17.

The Lu-The Flying Service, in conjunction with the school, does commercial flying and sells airplane motors and parts.

McMULLEN SCHOOL OF AVIATION

Tampa, Florida

INSTRUCTION consists of the design, construction, assembly, repair and maintenance of airplanes and motors; flying instruction, consisting of eleven hours in the air, one hour solo flying without extra cost to the student, providing the student is capable of soloing within the specified time: practical management of an airplane company, the student being allowed to spend as much time as he desires in the shops and offices, and given the opportunity to make trips with the company's planes that are out on all kinds of work such as advertising, passenger carrying, photography and sales demonstrations, thereby gaining practical experience.

The tuition for the combined flying and ground courses is $250; other instruction at $25 per hour in Curtiss JN4Ds or $30 per hour in new type planes.

The school has been operated at Tampa for two years; for five years previous it was operated at Atlanta, Georgia and Huntington, West Virginia.

Room and board may be secured at the field for $10 per week.

A total of at least four ships are available for instruction at all times, including Swallow, Waco, JN4D, and Hess.

Nine students are receiving instruction at the present time; three instructors. Ninety-four students have been trained since starting.

The Tampa municipal field, occupied by the school, is four miles N.W. of the center of town; L shaped, each leg of the field being ¼ by ½ mile, with good approaches. It is sodded and in excellent condition at all times.

The A. B. McMullen Company also distributes planes and operates a commercial flying service.

WESTERN AIRPLANE CORP. SCHOOL

Chicago, Illinois

THE Western Airplane Corporation is in coöperation with the Chicago Flying Club in the training of flying students and the facilities and instructors of the Chicago Flying Club are used for that purpose. The fees are based on a membership in the Chicago Flying Club and the average cost of soloing is $90, although most students continue their instruction after this period to obtain the minimum of 50 hours required for a Government license or a maximum of 200 hours required for a transport license.

The instruction consists of primary or basic course and from then on the student advances to more difficult flying and tactics.

The training of flying students through the Western Airplane Corporation and the Chicago Flying Club has been in operation for two years. Living facilities for students may be found just inside of the Chicago city limits within two miles from the field. Board and room may be secured for from $8 to $10 a week.

The number of airplanes used varies from three to eight. Three of these ships are owned by the Chicago Flying Club and the others are in the service of the club. The types of ships used are Canucks, Jennies, Standards and King Birds.

There are two instructors on the field every day and several reserve instructors for busy periods. The average number of pupils taking flying training over the period of operation is 100.

The field is located northwest of Chicago and is 140 acres in extent, well drained, easy of approach and with open country surrounding.

The Western Airplane Corporation also designs and builds airplanes.

DES MOINES AIRPORT FLYING SCHOOL

Des Moines, Iowa

GROUND, shop and flying instruction is given for $225. The school has been in operation for five years.

From three to five planes are used for instruction—Humming Birds and special types.

Nine students are now training; three instructors are employed. Living facilities for students are good.

The airport is located northwest of Des Moines. Commercial flying is also done by the Des Moines Airport Company.

(To be continued in July)

A. B. McMullen and a few of his students at Tampa, Florida.

Announcing

Newest and Latest

Home Study Course

in

AVIATION

perfected after years of study and numerous consultations with world famous pilots and engineers. The most up-to-date course now being offered.

GET READY NOW

for the greatest opportunity you will ever have. Aviation is growing by leaps and bounds and pays $3,000 to $10,000 a year for trained men.

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in all subjects necessary for government license. All our instructors qualified pilots and graduates U. S. Army Schools.

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to first one hundred students enrolling. Five dollars brings first lesson, discount certificate and free booklet "What Aviation Means to YOU."

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Gentlemen:

☐ Send me free booklet, without obligation.

☐ Enclosed is $5.00. Enroll me today for first lesson. It is understood that I get my money back if not satisfied.

(*Indicate by X what you desire*)

Name .... *Age* ....

Street ....

City .... *State* ....

What Do You Know About Airplanes?

A FEW years ago men had to learn about aircraft from personal, costly experience. They had no one to guide them—no one to point out mistakes when they were made—and therefore years were spent learning what takes months now.

THOROUGH — PRACTICAL TRAINING

Today the American School of Aviation offers you these long years of experience and knowledge, which cost millions to acquire, in their new and fascinating Home Study Course in Practical Aeronautics which has been highly endorsed by prominent aviation authorities.

WRITE TODAY

No matter whether you have worked with airplanes all your life or are just beginning in the industry you owe it to yourself to send for a complete and detailed outline of this training and our new and interesting free book, "Opportunities in the Airplane Industry."

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***Dept. 277A*, 3601 Michigan Ave., CHICAGO, ILL.**

LEARN to FLY

You Fly by Flying.

THE SWEENEY SYSTEM *of Practical Airplane Mechanics*

The Sweeney System

first prepares a student by intensive practical work on motors, building, recovering wings, rigging and all details of construction, repairing and handling. This is called ground school work. To show you the quality of the men who teach you, look at Spencer and Wimer for instance. Spencer was an army pilot and has been teaching and doing commercial flying since 1917. Wimer is a college man, went overseas, was with the 1st Air Park as an observer, spent over 200 hours in the air and since the war has been with two big aircraft corporations.

Learn to Fly!

Aviation is no longer a mystery—no longer a hazard; no. It is a business, growing greater and more important; you can qualify as a mechanic, engineer, repair man, builder or a pilot.

opens up a world of opportunities for young men. The Sweeney System has no planes to sell, and sticks strictly to teaching both ground work and pilotage. Sweeney Airport is one of the best and safest fields in the U. S. All the resources of this Million Dollar School insure you the best, most practical instruction. Mechanics earn $50 to $150 a week. Flyers, up to $500.

The Sweeney System

is divided into two parts. **First:** You are thoroughly taught in the ground school. This fits you as an aviation mechanic. You can build your own plane and do anything required in aviation mechanics and construction and repairing when you have finished this work. You are thoroughly taught motors, etc., and work with thousands of dollars worth of new material, and all types of engines.

Secondly: After completing this work if you want to be a pilot you take ten hours of flying. Now when you understand that two to seven hours is all the average man needs to learn expert flying you will appreciate what ten hours in the air under skilled men will do for you.

On the ground 5 men are needed for one in the air, but if you want to become a pilot you easily master the work and can go into postal, government, or commercial work. Flyers are in demand, earning big money at fairs taking up passengers, etc. $5 for a 10 minute flight is pretty fine pay!

Send Name Today

for full details of this aviation mechanical course and photographs of planes and equipment actually used; also full information as to the commercial end of flying and opportunities for young men.

LEARN TO FLY BY FLYING
Sweeney
SCHOOL of AVIATION
1805 SWEENEY BLDG, KANSAS CITY, MO.

THE ROMANCE OF FLYING

FACTS AND FIGURES

By Ralph W. Cram

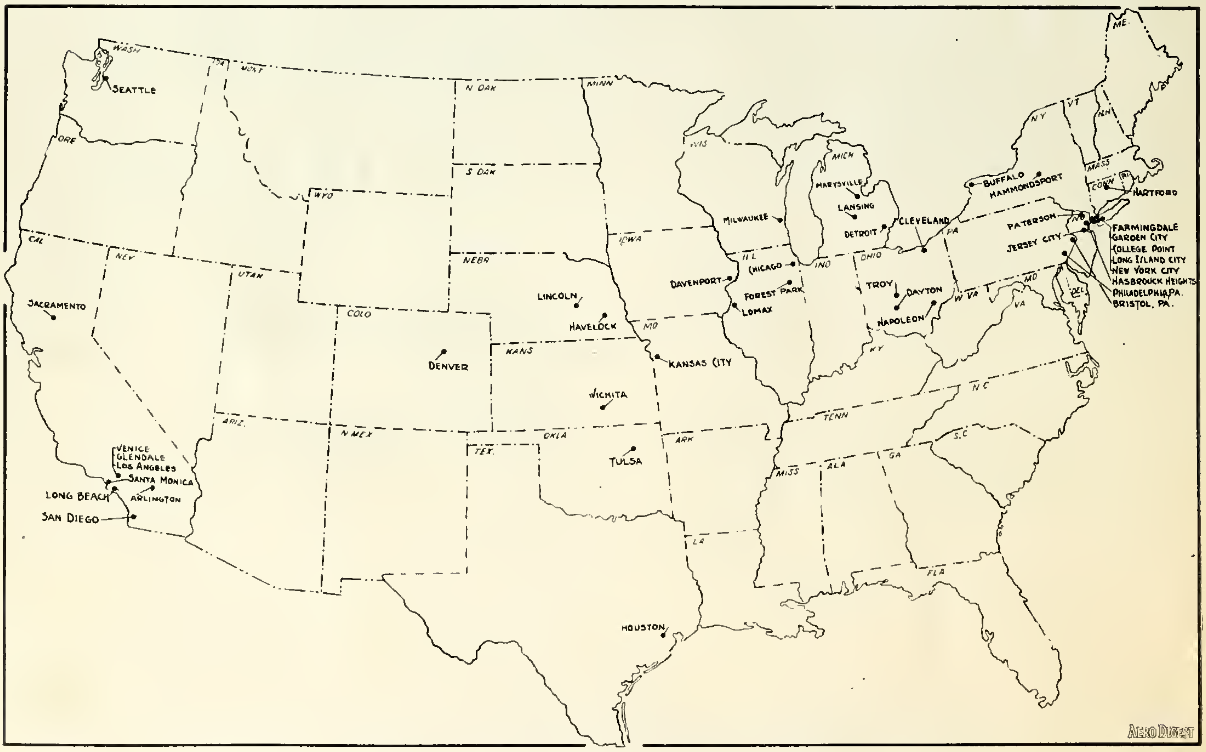
ANYONE who has been flying, and writing about flying, for the past eight years, might be thought to have exhausted the subject of the romance of aeronautics.

His first thrills might have come, as did mine, from his first views of his home city and its environs from a Jenny or a Canuck, hopped from a clover field on the edge of town. That early visit of a gypsy flyer was apt to be followed by the locating of a regular landing field, duly marked, which became the starting place for cross-country flights as well as a lot of flying over the local terrain.

Then if he found recreation in flying, and recognized an opportunity for public service, he might thereafter fly far afield, and come to know what the Army was doing, and something of the Navy in the air, the air mail, and our commercial flyers.

If he were seeking romance, it was easy to find, as the panorama of our Middle-Western farmland unrolled below him, succeeded as he headed into the East, by the old-time oil lands in Ohio, the picturesque Ohio river country, the mining regions in Pennsylvania, and the beauties of the mountains. An unforgetable memory would be his first sight of the green ridges of the Alleghenies, as they lay across his path; or the variegated coloring of their autumn verdure. Looking down on the valleys of the Shenandoah, the Cumberland and the Potomac, he asked himself if this were not the very pinnacle of flying thrills. Probably it was not, for later he was to find it elsewhere—hearing the Atlantic beating against its coastline as he flew north to Mitchel, looking down upon the Statue as he crossed the lower bay to Long Island, or waving greetings to other air travelers as planes were passed singly or in groups; or one glorious day in early fall, when on one of the air lanes, he met and exchanged salutes with the 30 or so, passengers and crew, in the cabins of the Navy's pride, the Los Angeles.

With any of these he might write, too, of a variety of experiences with the half a hundred kindred spirits and half as many planes, upon an annual Reliability tour; how all sorts of experiences were had in all kinds of weather in



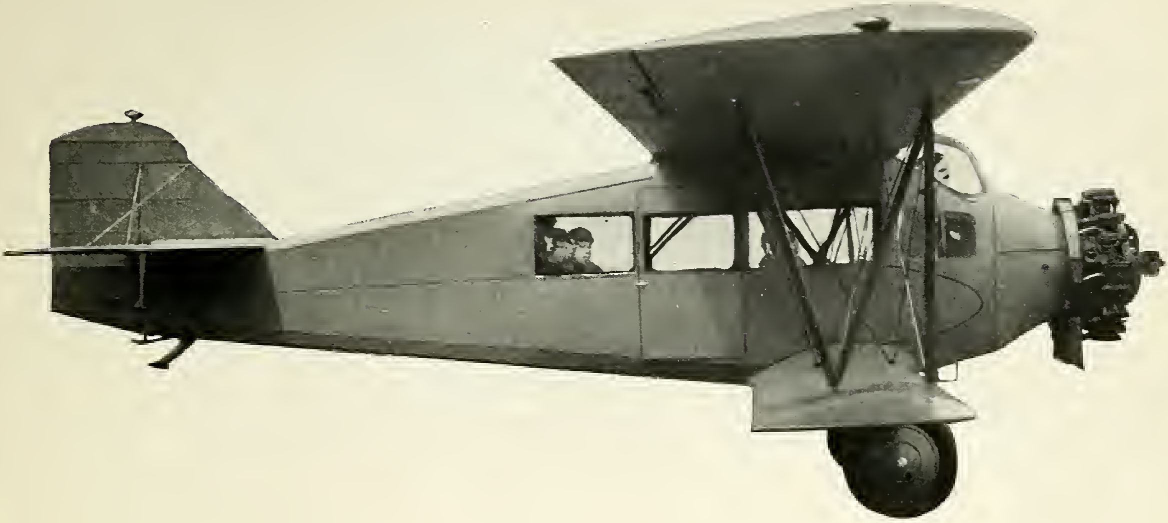
Map showing location of airplane and airplane engine factories in the United States.

AIRPLANE FACTORIES

Arlington, Calif. (*Prest Airplanes & Motors*)
Bristol, Pa. (*Keystone Aircraft Corp.*)
Buffalo, N. Y. (*Curtiss Aeroplane & Motor Co.; Consolidated Aircraft Corp.; Eberhart Aircraft Products Co.; G. Elias & Bro., Inc.*)
Chicago, Ill. (*Western Aircraft Corp.; Heath Airplane Co., Inc.; E. M. Laird Co.*)
Cleveland, Ohio (*Glenn L. Martin Co.*)
College Point, L. I., N. Y. (*Sikorsky Mfg. Co.*)
Davenport, Iowa (*Central States Aero Co.*)
Dayton, Ohio (*Johnson Airplane & Supply Co.*)
Denver, Colo. (*Alexander Aircraft Co.*)
Detroit, Mich. (*Ford Motor Co.; Stinson Aircraft Corp.; Hess Aircraft Ca.*)
Farmingdale, L. I. (*Fairchild Airplane Mfg. Co.*)
Forest Park, Ill. (*Yackey Aircraft Co.*)
Garden City, L. I., N. Y. (*Curtiss Aeroplane & Motor Co., Inc.; Ireland Aircraft, Inc.*)
Glendale, Calif. (*Kinner Airplane & Motor Corp.; Waterhouse & Royer*)
Hammondsport, N. Y. (*Aerial Service Corp.*)
Hasbrouck Heights, N. J. (*Atlantic Aircraft Corp.*)
Havelock, Nebr. (*Arrow Aircraft Corp.*)
Kansas City, Mo. (*American Eagle Aircraft Co.*)
Lansing, Mich. (*Driggs Aircraft Corp.*)
Lincoln, Nebr. (*Lincoln Standard Aircraft Co.*)
Lomax, Ill. (*National Airways System*)
Long Beach, Calif. (*International Aircraft Corp.*)
Long Island City (*Chance Vought Corp.*)
Los Angeles, Calif. (*W.F.W. Aircraft Co.*)
Marysville, Mich. (*Buhl Aircraft Co.*)
Milwaukee, Wisc. (*Hamilton Aero Mfg. Co.*)
Napoleon, Ohio (*Woodson Aircraft Corp.*)
New York City (*Loening Aeron. Engineering Corp.*)
Philadelphia, Pa. (*Pitcairn Aviation*)
Sacramento, Calif. (*Irwin Aircraft Co.*)
San Diego, Calif. (*Ryan Airlines Ca.*)
Santa Monica, Calif. (*Douglas Company; Bach Aircraft Co.*)
Seattle, Wash. (*Boeing Airplane Co.*)
Troy, Ohio (*Advance Aircraft Co.*)
Tulsa, Okla. (*Mid-Continent Aircraft Co.*)
Venice, Calif. (*Stearman Aircraft, Inc.; Catron & Fisk*)
Wichita, Kans. (*Travel Air Mfg. Co., Inc.*)

ENGINE FACTORIES

Buffalo, N. Y. (*Curtiss Aeroplane & Motar Co.*)
Detroit, Mich. (*Detroit Aero Engine Co.; Grant Marine Motor Co.*)
Farmingdale, L. I., N. Y. (*Fairchild-Caminez Engine Corp.*)
Garden City, L. I., N. Y. (*Curtiss Aeraplane & Motor Co., Inc.*)
Glendale, Calif. (*Kinner Airplane & Motor Corp.*)
Hartford, Conn..(*Pratt & Whitney Aircraft Corp.*)
Houston, Texas (*Tips & Smith, Inc.*)
Jersey City, N. J. (*Vimalert Co., Ltd.*)
New York City (*Johnson Motor Products Carp.*)
Paterson, N. J. (*Wright Aeronautical Corp.*)
Sacramento, Calif. (*Irwin Aircraft Co.*)



The Buhl "Airsedan"

THE ideal cabin airplane, built to give the maximum in comfort, safety, visibility, performance and economy.

A new criterion of design combining graceful lines, a beautifully finished cabin, four comfortable passenger seats and large safety windows.

The cabin has 120 cu. ft. of cargo carrying space and the "AIRSEDAN" meets the requirements of the Aeronautics Branch of the Department of Commerce carrying a pay load of 1000 lbs.

BUHL AIRCRAFT COMPANY

MARYSVILLE, MICHIGAN

many kinds of ships. This would make a story all by itself, with its cameraderie, its competition, and the lessons gleaned about planes and pilots, engines and wings, cockpits and cabins, and all the improving and refining that makes the airplane of to-day so different from the airplane of yesterday.

THE PLANES OF YESTERDAY

AH! That airplane of yesterday. It did its stuff, as the flyers of yesterday did theirs. This writer will never get a bigger thrill out of flying than he did in '21, when he flew across Iowa with Fred Wallace of the Davenport airport to the Omaha Pulitzer, stopping at Iowa City, Des Moines and Atlantic for gas. That faithful Jenny and its OX4 never missed a spark on the way to Omaha or back. The 70 other planes that landed there were all of about the same wartime vintage—all but the racers and a few stunters. Sufficient unto the day were the planes thereof—but they wouldn't do anymore.

So much for the romance of the postwar flying days. It yields delightful reminiscences, but those who flew through them, and who have done their annual stunt of flying since, must look elsewhere now. If they are keen to witness a steady, and are hoping for a prompt and rapid, development of flying in the United States, it is the writer's humble opinion that they can find it right now in the airplane factories, on the landing fields, and along the airways over which fly the winged mail carriers of the nation.

WHAT THE FLAT-FOOTED DON'T KNOW

NO one who realizes the developments in connection with the aircraft industry, in the past year or two, can help but be shocked, at times, by the absolute ignorance of it that is shown by otherwise intelligent and well-informed people. Business men seem to-day to be divided into two classes—the air-minded and the flat-footed.

One supposably intelligent business man naively inquired of me, the other day: "Don't you suppose that in a few years we will see quite a lot of travel by air?" He rather thought there would be, but of the real tangible signs pointing in that direction he had no idea, information or conception.

So I took him on a little imaginary flying trip in the course of which we landed on the fields that were close by some of the centers of activity in the manufacture of aircraft in this country of ours.

WE'RE OFF!

STARTING at the metropolis, I pointed out to him that if we were interested in engines we could go over to Paterson, N. J., and learn all about the Wright air-cooled power plants; to the northeast, at Hartford, Conn., the still bigger Pratt and Whitney Wasps and Hornets were produced; and at the various Curtiss centers, Garden City, L. I. and Buffalo, N. Y., the famous Curtiss engines; the Fairchild-Caminez at Farmingdale, L. I.; the Packard, Continental and the Detroit Aero Engine plant at Detroit; on the West Coast, the Irwin at Sacramento, and Kinner at Glendale. We also visited several plants that are reconstructing wartime engines such as Tips and Smith at Houston, Texas, Grant Marine Motors at Detroit, Vimalert at Jersey City, and Johnson at New York City.

Thus he could see what the demand for airplane motors was doing in the way of making payrolls. But he said he would take my word for it; that he was just a layman like myself, rather mystified by engines; but that if I could show him where they were really making airplanes, he would be interested.

All right, I agreed; let's look around New York state a little, and I took him over onto Long Island, to see the new cabin planes of the Fairchilds, and their photographic outfits. We looked over the scene of Sikorsky's early struggles, and his later development. We called on the Chance Vought folks, who make such a lot of clean-lined planes for the government; then on the Loenings of amphibian fame; got in touch with the various Curtiss activities, including Casey Jones and his flying service; saw the Ireland Meteor in action and his new Neptune amphibian under construction and visited Mitchel and the other fields on the Island. Then, just to clean up New York and get it off our list, we took a swing around the state, and saw the special planes they build at Hammondsport, including the Mercury, and the big development at Buffalo, where the Consolidated make their training planes and the Eberhart, G. Elias & Bros., and the Buffalo Curtiss plants are located.

Back to our starting point, and then a little hop over to Hasbrouck Heights, where the Fokkers are doing big stuff; then to Philadelphia, where Harold Pitcairn and associates are building nifty commercial planes and preparing for their new air mail contract.

From there it was a short hop to Bristol, Pa., where the Keystone (Huff-Daland) company had to move from Ogdensburg to take care of their expanding contracts for cotton dusters and army planes, and other types of aircraft.

Next came Ohio, with Martin's factory at Cleveland. At Troy we found that the Advance Aircraft Company swamped with orders for Wacos. At Napoleon they were building the Woodson, and Dayton provided a day or two of sightseeing, including an eyeful of the new Johnson Twin-60, in which we revert to the pusher type for a novel plane for which great claims are made.

Our next jump took us north to Detroit, to find aircraft running only second to automobiles in popular interest in industrial circles. We ran out to Hempstead to view the big planes the Fords are making, but although we knocked on the door they wouldn't let us in to see what they were doing in their work on airplane engines and toward the development of smaller planes. A lot of folks whispered to us, however, that there was something doing.

Some trip to get around there and see the Stinson factory; to call on the Hess people, with their light plane interests; and to see a lot that is doing but about which not so much is being said.

Side trips to Lansing Mich., showed what Driggs has started there; to Marysville, where the Buhl factory is going full blast; and to Milwaukee, which revealed the interesting all-metal cabin plane that Tom Hamilton has recently developed. Then to Forest Park, to see Tony Yackey's outfit, and into Chicago to see the Western Aircraft Corporation's King Bird, the Heath light planes, and the E. M. Laird plant.

Now for the Mississippi river; and we made it right at my own town of Davenport, Ia., and I showed him the dandy little plane that the Central States Aero Company is building around a Rickenbacker engine. It's a light cabin two-place job.

Just down the river a bit, I told him, they are building the town of Lomax around an airplane they call the Air King. And I told him about Ray Page and his sport planes and Lincoln Standards at Lincoln, and the Arrow at Havelock, Neb., while we turned southwest to see the American Eagle plane, at Kansas City.

And now, I said, we'll see the real aircraft center of the Middle West, and I hopped him over to Wichita, Kansas. There we saw Walter Beech and his group making all sorts

(Continued on page 625)

A
DARTMOUTH
MILLS FABRIC

LEADS THEM ALL!

FACTS—

DARTMOUTH-TEX is not a processed fabric. It can, however, be supplied in the processed state if desired. It is put up in convenient rolls, which ***INSURES AGAINST CREASES, OR WRINKLES.***

Grade "A" is a mercerized, full count 36" wide for—
WINGS
TAIL SURFACES
FUSELAGE
COVERINGS

Large stocks carried at all times. Write for samples and quotations.

ALSO SURFACE TAPES, (SCALLOPS) ANY SIZE REQUIRED.

THURSTON CUTTING CORPORATION has been appointed sole agents for the distribution of the Dartmouth-Tex Aero Cloth made for over 10 years by the Dartmouth Manufacturing Corporation under the personal supervision of Mr. Walter H. Langshaw.

The Dartmouth Manufacturing Corporation has woven more Aero Cloth to meet Army and Navy specifications than any other mill in the United States.

ALL DARTMOUTH-TEX AIRCRAFT FABRIC IS GUARANTEED TO GIVE ENTIRE SATISFACTION

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THURSTON CUTTING CORPORATION
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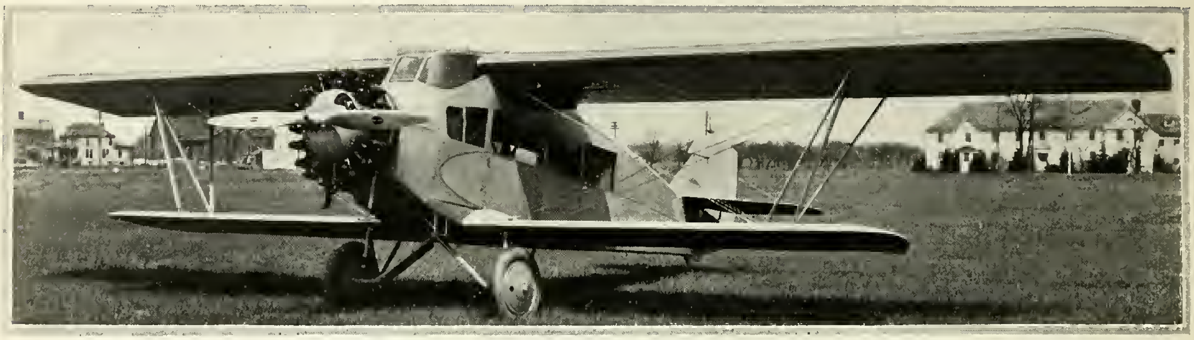
Dartmouth-Tex Aero Cloth Meets All Government Specifications

TECHNICAL DEPARTMENT



THE BUHL FIVE-PASSENGER AIRSEDAN

A FEW weeks after it was test flown the new Buhl Airsedan was given a severe cross-country test in a flight from Marysville, Michigan, to Washington, D. C. At Washington it was publicly demonstrated to visitors at the All America Aircraft Exhibit at Bolling Field. Numerous passengers were taken up for short flights above Washington, many of them making their first excursions in the air. The favorable comment by those who made flights and those who watched its performance from the ground showed the popularity of this type of air sedan. During the week at Washington, Pilot Louis Meister had occasion to demonstrate the machine in all kinds of weather. At times the field was covered with mud which some of the pilots hesitated to take off from, yet the Airsedan continued to carry passengers throughout the day. At the conclusion of the air meet, the plane was flown back to Marysville for further tests.

The Airsedan is the most recent development in the closed cabin commercial types. The pilot's compartment is enclosed with celluloid windows which may be opened when desired. At the left side, a large door permits easy access.

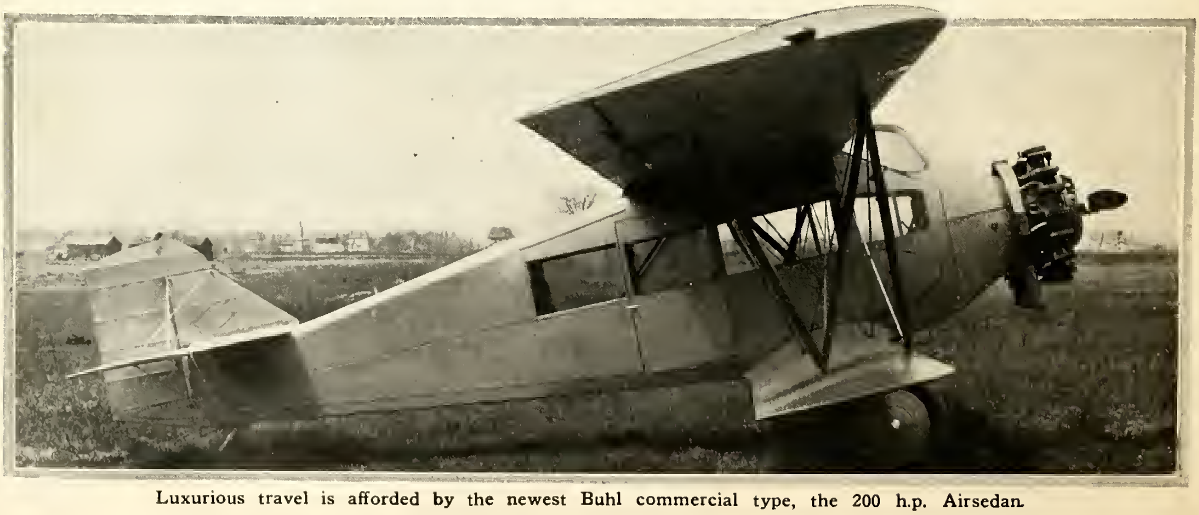
Aft of the pilot's cabin is the roomy cabin for four passengers. Internal bracing is arranged to provide the least obstruction to the cabin which is tastefully upholstered with a new rubberized fabric having the appearance of suede leather; the covering, called "Kemisuade", is washable. The two forward seats have backs hinged vertically at the center of the plane, so either back may be swung forward, permitting easy access. The two rear seats are fixed at the rear of the cabin. A large door is provided at either side of the body with an easily operated positive action bolt. The large windows running the entire length of the cabin give unusually good vision. A window at the forward wall permits the pilot and passengers to converse. The fact that the cabin is entirely enclosed and a muffler is provided for the engine exhaust, makes ordinary conversation possible between the passengers.

Entrance door to the Buhl Airsedan

In the cabin transverse bracing, oval frames of tubular steel are used in place of cross-wires or the ordinary angular corner braces. The entire framework of the body is of welded steel tube, chrome molybdenum and carbon steel, according to the stresses involved in the members.

In the landing gear chrome molybdenum steel tubes are used with the bracing members arranged to transmit landing loads through the wing stubs. The arrangement is original and efficient, having a divided axle and wide track, (80 inches). Rubber disc shock absorbers give a vertical movement of 5 inches. 36 by 6 inch Goodrich Silvertown Cord tires are used. Sauzedde wheels and brakes of the latest type insure safe landings on the average field.

Wings are of conventional wood construction. The span and chord of the upper wing are greater than the lower. The smaller lower wing gives good visibility downward. The leading edge and nose of the wings are of sheet aluminum. In the top wing, box beams are used, with veneer



Luxurious travel is afforded by the newest Buhl commercial type, the 200 h.p. Airsedan.

Announcing the

Pitcairn Fleetwing Deluxe

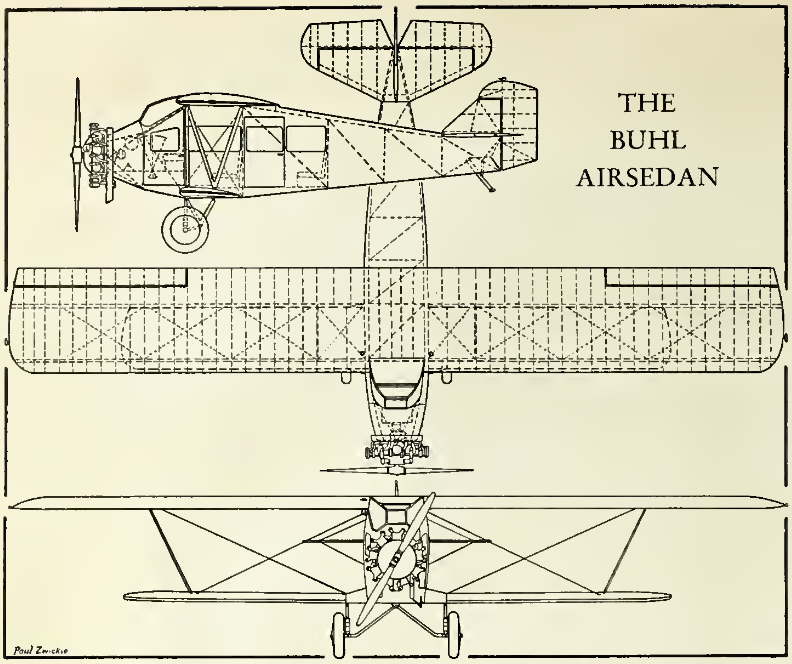
THE Pitcairn Fleetwing Deluxe—thoroughly modern in design—is characterized throughout by the care and craftsmanship of Pitcairn construction. This three-place plane, powered with a new OX 5 motor, is distinguished by speed, maneuverability and quality of construction.

The Pitcairn Fleetwing Deluxe has been placed on the market to serve the interests of those who are able to pay the higher price necessary to obtain superior workmanship and maximum performance.

Just as the higher priced automobile proves itself the best investment in the long run, so this plane because of its durability, reliability and low maintenance cost will prove itself a truly economical purchase.

We welcome your personal inspection and trial of the Pitcairn Fleetwing Deluxe. Illustrated descriptive pamphlet will be mailed on request.

PITCAIRN AIRCRAFT INC
LAND TITLE BUILDING PHILADELPHIA



webs. The lower wings are built upon solid spars. Ailerons on the top wing only, measure 10 feet in span and one foot in chord.

Streamline steel tube N struts are used between the wings. The ends are provided with adjustable eyes to allow regulation of the incidence setting.

Gravity tanks are built into the upper wing at either side of the body, each tank having a capacity of 35 gallons. A 6-gallon oil tank is located under the cowl behind the engine.

Hartshorn streamline wires are used throughout for external rigging.

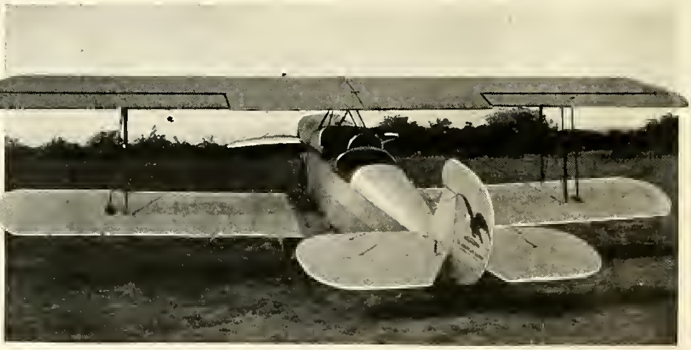
The 200 h.p. air-cooled Wright J-5 engine drives a 9-foot diameter Standard Steel adjustable propeller. An aeromarine inertia starter is used. On the pilot's instrument board which is made of sheet aluminum, the following instruments are installed: fuel level gauge; Splitdorf magneto ignition switch; dashboard light switch; running light switch (for wing tip and rudder lights); Pioneer altimeter (indicating to 20,000 feet); Pioneer compass, oil pressage gage (registering to 120 pounds for square inch) air speed meter (indicating to 140 miles per hour); National Gauge Co.'s temperature indicator; Jones Navy Type B tachometer; Imperial and Lunkenheimer starting primers.

Gasoline shut-off valves and a Pyrene fire extinguisher are within easy reach of the pilot.

General Specifications:

Wing span, upper wing	45 ft., 0 in.
Length over all	27 ft., 4 in.
Height over all	9 ft., 0 in.
Wing span, lower wing	31 ft., 10 in.
Wing chord, upper wing	6 ft., 0 in.
Wing chord, lower wing	3 ft., 6 in.
Gap between wings	63 in.
Area of upper wing, with ailerons,	240 sq. ft.
Area of lower wing	90 sq.ft.
Total wing area	330 sq.ft.
Dihedral, lower wing only	½ deg.
Stabilizer and elevator area, total	45 sq. ft.
Fin and rudder area, total	20 sq.ft.
Weight of plane empty	2000 lbs.
Fuel carried (70 gallons)	420 lbs.
Oil carried (8 gallons)	60 lbs.
Total weight of pilot & passengers	895 lbs.
High speed	115 m.p.h.
Landing speed	50 m.p.h.

The American Eagle



American Eagles have proven their worth in rigorous tests made by flyers in eight states. They are the strongest, most durable, and best performing ships of their class obtainable anywhere.

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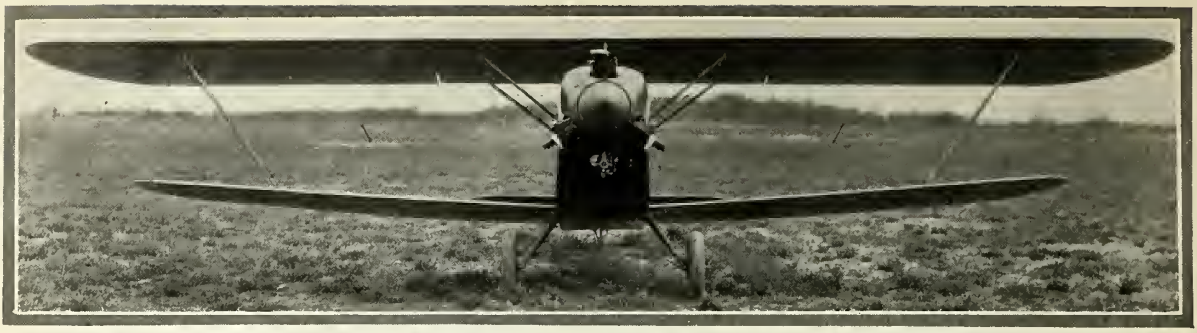
AMERICAN EAGLE AIRCRAFT CO.

2330 Harrison Street - - - - - - - Kansas City, Mo.

Fairchild have created a new cabin monoplane. Quite the finest machine in its class. The pilot's seat has been placed into the cabin. Powered with the Wright 200 H. P. "Whirlwind", it is the most serviceable plane for the transport of passengers and express goods. Extreme stability and spontaneous response to the controls make the Fairchild Monoplane easy to handle and a pleasure to fly. The cabin provides seating accommodation for four passengers and the pilot. The total laden weight is 3225 lbs., of which 760 lbs. is available for passengers and freight. Maximum speed 124 miles per hour approximately. Wing span 44 ft., or 12 ft. when folded. Write us about your aerial problem, Fairchild facilities are at your disposal.

Fairchild Airplane Mfg. Corporation
Farmingdale, Long Island

DIVISION OF FAIRCHILD AVIATION CORPORATION



THE NEW 40 h.p. DRIGGS DART II

EMBODYING features which hold an unusual appeal to the flying enthusiast, the new Driggs Dart II, product of the recently incorporated Driggs Aircraft Corporation of Lansing, Michigan, has made its initial appearance upon the market and is rapidly assuming favor with prospective purchasers of aircraft as the most practical ship in the field, both from the standpoint of economy and performance.

In designing the new light plane careful consideration was given to each and every factor, structurally and aerodynamically, to insure greatest performance and safety at a conservative cost to the buyer. Light weight combined with inherent stability are features placing the product in a class by itself, in that the average person with comparatively limited experience and training, and in the least air-minded, should be able to handle the ship with unusual ease.

The fuselage is of welded chrome molydenum steel tubing. It is fabric covered with no wires.

The tail surfaces are of welded steel tubing, fabric covered.

The landing gear is also of welded chrome molydenum steel tubing and has disc wheels with 20 x 4 straight-side tires. Brakes are optional.

The welded steel tubing tail skid is sprung with rubber discs.

Wings have spruce spars with duralumin stamped ribs and streamline steel tubing struts.

Gasoline is fed to the carburetor by gravity from tank in fuselage between cockpits. The oil tank is located in the cowl back of firewall and ahead of front cockpit. A special scavenging pump returns excess oil to tank from engine.

Standard dual control is fitted.

Performance

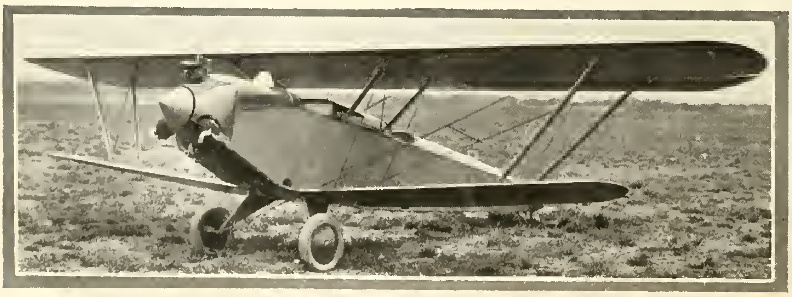
High speed	90 piles per hour
Landing speed	30 miles per hour
Rate of climb (at ground)	650 feet per min.
Absolute ceiling	18,000 feet

Specifications

Span (upper)	28 feet
Span (lower)	22 feet
Length (over all)	19 feet
Heighth	6½ feet
Upper wing	100 square feet
Lower wing	40 square feet
Total wing area	140 square feet
Stabilizer	8 square feet
Elevators	7 square feet
Rudder	5 square feet
Fin	2 square feet
Ailerons	16 square feet

H. M. Rinehart and Ivan H. Driggs.

Weight light	380 pounds
Fuel and oil	40 pounds
Personnel	300 pounds
Total weight	720 pounds
Power loading	18 pounds per h.p.
Wing loading	5.1 pounds per square foot
Engine, Anzani, 3-cyl.	40 h.p. at 1,800 r.p.m.



The new Driggs Dart II, sport biplane designed by Ivan H. Driggs.

VALENTINE JEWEL COLOR EXHIBITION

VALENTINE & COMPANY have prepared a permanent exhibit of the Nitro-Valspar Jewel Colors for finishing and refinishing airplanes and automobiles, which may be seen at their New York office, 456 Fourth Avenue.

Aircraft, automobile and body manufacturers, refinishers and others whose business requires that they follow the latest developments in colors and color combinations are invited to see this exhibit at their convenience. It includes not only panels the size of those used on passenger cars, but a collection of the jewels in their natural matrix settings which served as the actual inspirations for the color combinations that the panels were made to match.

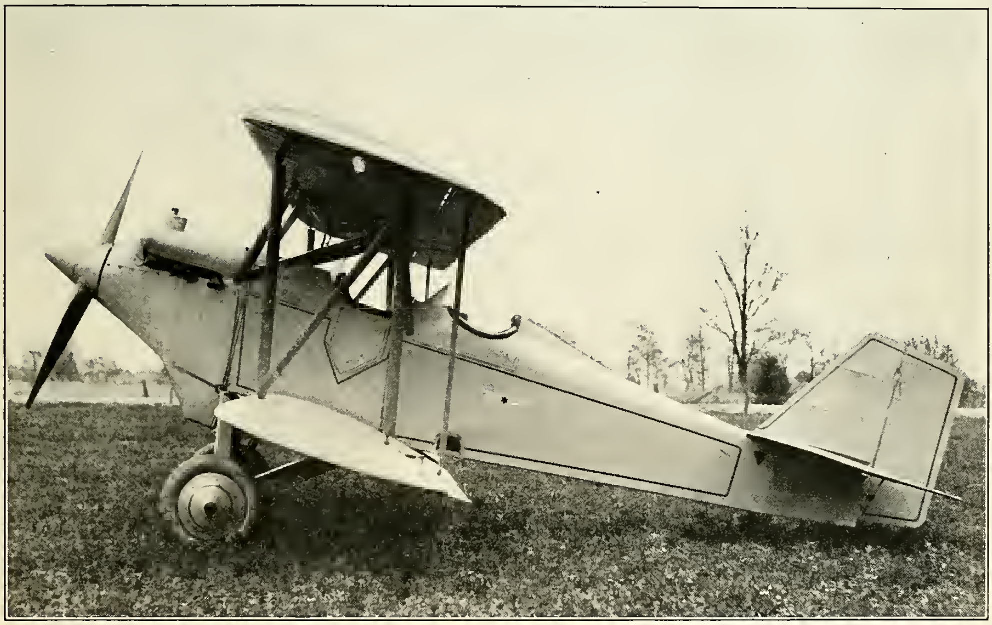
The jewels in this Valentine collection have been collected during the past two years as a part of an intensive study of the fascinating colors to be found in nature's jewels. While it is true that others have gone to nature for new color ideas, studying the flowers, plumage of birds and other sources, the resulting color combinations have never been entirely satisfactory when duplicated on the hard surface of an airplane or automobile. It remained for Valentine & Company to go to nature's one color source in which the loveliest colors were to be found in hard surfaced materials—the jewels. With this end in view, many famous jewel collections were carefully studied—such as that at the American Museum of Natural History in New York and the Field Museum in Chicago. The result has been an entire series of new colors and combinations that are strikingly different.

Take, for example, the Indian sapphire. This precious stone is found in nature in a pegmatite matrix of gray with fine yellow stripes. These same colors are reproduced in Nitro-Valspar Jewel Color panels. Then there is the beautiful lavender tourmaline found also in pegmatite—brown in this case—two colors which make a charming combination.

Other combinations include the Burma ruby with a light crystaline gray matrix, the emerald, with another light gray shade of mica schist, having a green stripe; the Mexican light blue turquoise and Arabian deep-hue turquoise with a band of ivory and fine jacynth stripe matching the matrix colors; and dozens of additional sparkling combinations.

THE ARISTOCRAT OF THE AIR

HESS BLUE BIRD



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Dollars fly further with BLUE BIRDS and your initial investment is strikingly low.

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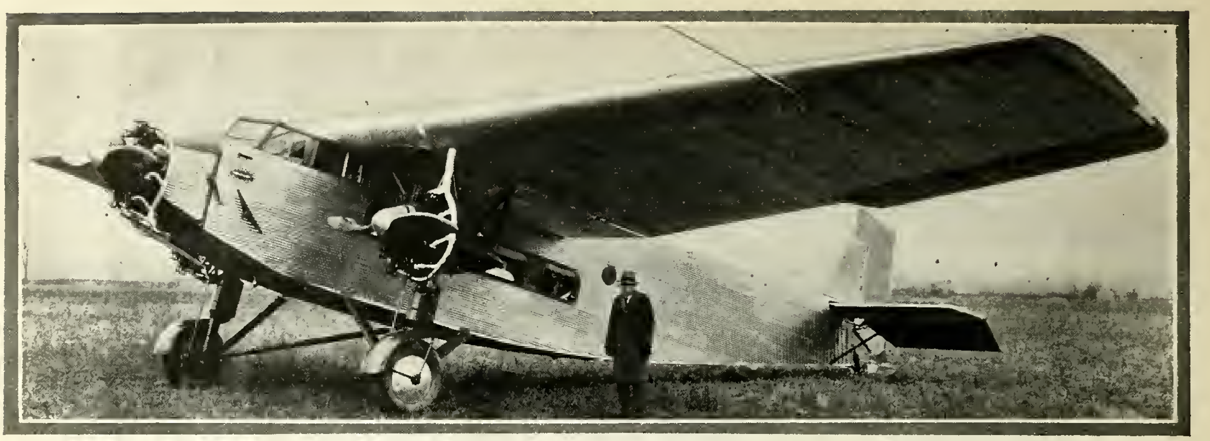
$2,675.00

Flyaway Wyandotte, Mich.

HESS AIRCRAFT COMPANY, Wyandotte, Mich.



THE TRI-MOTORED FORD AIR TRANSPORT

THE entire tri-motored Ford air transport, model 4-AT, is built of duralumin, a copper-aluminum alloy, as strong as structural steel but in one-third the weight. The complete plane with its 600 horsepower of engines weighs but a little more than a limousine car, and yet twenty tons of sand can be balanced on the wings as a test load without breaking them down.

The wings themselves are supported on three cantilever trusses much resembling the usual roof truss construction and with known formulae of design that have been used in the steel industry for years. These spars taper from a thickness of 32 inches at the root to 6 inches at the tip making a very rigid truss. With three of these spars in place, the skin of the wing is formed of corrugated metal fourteen-thousandths of an inch thick which is riveted to the spars with intermediate trussing for its structure fore and aft. The corrugated skin of the wing forms both the real rib structure and the surfacing.

The body of the plane and the fuselage is made of transverse bulkheads of duralumin shapes set into a jig and with corrugated metal skin riveted fore-and-aft over the outside to form the outer covering. This is just the reverse of the wing structure for in this case, the corrugated metal runs the longest way of the structure instead of the shortest. The structural part goes crosswise on the inside of the ship.

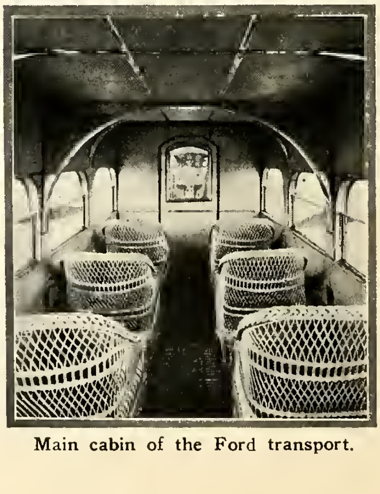
The tail structures are built up very similar to the wings except that the spars are thinner and the span much less. Corrugated metal is used. The landing gear is extremely wide, having a tread of 15 feet with each wheel independent of the other. The main strut extends from the wheel up to the engine mount and is fitted with compression rubber springs and an oleo cylinder, which not only absorbs the shock, but checks the rebound. The tail skid is also fitted with compression rubber and oleo. An additional feature of considerable merit is that all of the landing gear struts, including the axle itself, are fitted with compression rubber discs which permit of slight motion, and thus absorb the jar often felt in taxying other machines. Brakes can be had on the front wheels of the plane and a caster wheel at the rear of the plane to assist in the quickness of takeoff and ease of landing and steering.

The control system actuates the elevators, ailerons and rudder by a wheel and pedals in the usual manner. Control surfaces are built of duralumin, carefully proportioned as to size and shape and are mounted throughout on ball bearings with the result that the machine handles lightly in the air. Two pilots are situated side by side toward the nose of the fuselage and in front of the wing, their cockpit being reached from the cabin by a large door forward. The pilots therefore, like the passengers, enter through the ship without in any way approaching the propellers. Dual wheel control is fitted within an accessible and roomy cockpit.

Due to the pilot's location, the vision is excellent for both pilots, who are able to see back to the rear on both sides and in front even at the steepest landing angle. Their cabin is comfortable and roomy and with every accommodation for cross-country commercial work.

The three-engined plane is equipped with Wright whirlwind nine-cylinder air-cooled radial engines. The engines are managed from one control board between the two pilots and so arranged that each engine individually can be accelerated or all at once with equal handiness. Triple set of engine instruments enables the pilot at all times to know exactly the behavior of each of the three engines and how closely they synchronize. The engines are fed their fuel by gravity from tanks situated within the wings and carrying over 200 gallons of fuel.

A wing of really thick section is used. the main spar being almost 3 feet deep on a cord of trifle over 12 feet at the center. The fuselage hangs below these wings, and is fitted with clear semi-circular windows which give one an unusual view in the air. There is nothing to obstruct perfect vision, the wing being above, and one can look cross-country clear to the horizon with the wing above shading him from the direct rays of the sun. The pilots can see the horizon in every direction, can see their own landing gear, and practically every part of the plane from the pilots' seats. An adequate ventilating system is installed which may be adjusted for the comfort of the passengers.



Main cabin of the Ford transport.

Specifications

General Dimensions

Span	68 feet 10 inches
Length	49 feet 0 inches
Area, wings	740 square feet
Height	12 feet 8 inches
Wheel tread	15 feet 4 inches

Performance

High speed	110 miles per hour
Cruising speed	100 miles per hour
Stalling speed	59 miles per hour
Radius of action (cruising),	500 miles (5 hours)

Data

Weight empty	5,200 pounds
Useful load	4,000 pounds
Total weight loaded	9,200 pounds
Gasoline capacity	230 gallons
Wing load per square foot	12.45 pounds
Power load (pounds per h.p)—	
2 engines	23.0 lbs.
3 engines	15.3 lbs.
Cabin Capacity:	
Width	4 feet 6 inches
Height	5 feet
Length	15 feet

Passenger accommodation, 335 cubic feet
(Seats for 12 persons—baggage hold, etc.)

Berry Brothers' Progressive Aircraft Finishes are Used by 95% of American Manufacturers of Commercial Airplanes

Lionoil

The only finish that could stand the gaff!

EVERY part of the big, all-metal Yackey Transport used by the Stirling New Guinea Expedition in its thrilling exploration of dangerous and little-known Pygmyland, was protected with Berry Brothers' Lionoil.

This incomparable finish—specified by the French government for protection of all duralumin aircraft construction—is the only finish that could withstand the tremendous exposure to which this ship was subjected.

Temperatures ranged from more than 135 degrees Fahrenheit at sea level to lower than zero at high elevations. Positive protection against the corrosive action of salt water, tropical humidity, gasoline, acid and other elements was necessary—for rust would mean quick disaster in a dangerous country inhabited by head-hunting Dyaks.

Lionoil—the greatest rust preventive known to science—a finish of great durability and utility, *stood the gaff*. At the end of this now famous expedition, sponsored by Smithsonian Institute, the finish was in perfect condition.

Aircraft Berryloid—the high-luster pyroxylin enamel that withstands gas, oil, acid, salt water and the elements—is now available in more than 40 standard colors.

On the Wings *of* Progress

BERRY BROTHERS INC.

Varnishes Enamels Stains

DETROIT, MICH. WALKERVILLE, ONT.

Member Aeronautical Chamber of Commerce

ECLIPSE STARTERS

PRESENT production of aviation engine starters and generators by the Eclipse Machine Company is based on twelve years' continuous experience in this work, from the pre-war engine applications to the latest developments.

Hand turning gears are furnished in two sizes—a small size is available for engines in the 60 to 100 h.p. class. The larger and better known starter weighs 28 lbs. with a booster magneto, but can be furnished without it if desired. The booster magneto is integrally mounted and geared from the hand crank. Engagement and disengagement of the engine is entirely automatic. Provision is made to protect both the starter and the operator in case of backfire, by the incorporation of a torque overload release. These starters are furnished in various ratios depending upon the size of the engine to which they are to be applied.

Electric starters are furnished in two sizes, the smaller starter weighing about 14 lbs. for the smallest engines, and the larger starter weighing 34 lbs. for engines up to 2,000 cu. in. These are also made in combination hand and electric starters such that the hand crank or the electric motor may be operated as desired. These are entirely automatic with regard to engagement and disengagement with the engine, and also have embodied in them means for protecting the operator or the mechanism in case of backfire.

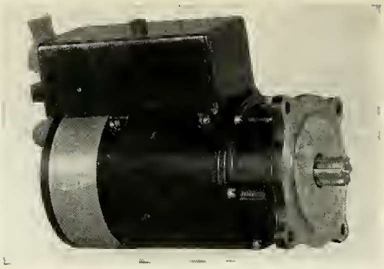
For the larger engines it has been found that the inertia starter contributes a considerable advantage in furnishing a momentarily high cranking speed, thus facilitating starting. These starters operate on the principle of storing energy by accelerating a small flywheel to a very high speed, and then expending the energy at the will of the operator by connecting the starter drive to the engine manually. An overload torque release is provided to protect the mechanism against overload, such as at backfire. Disengagement is automatic when the engine starts.

The inertia starter is furnished in both the vertical and the concentric forms, the former being suitable for the "V" type engines, whereas the concentrics are particularly adapted for the radial engines, but can be used on either the radial or the "V" type engines.

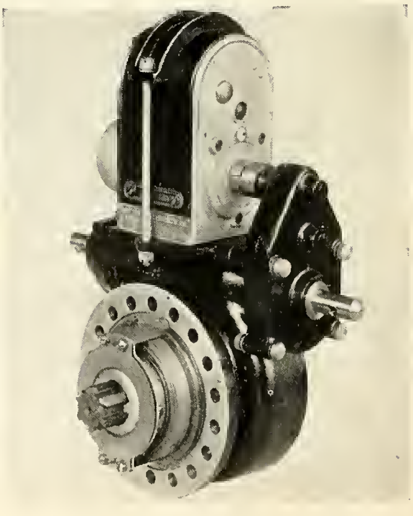
The vertical type of inertia starter is known as the Series VII and is suitable for engines up to 2,500 cu. in. It is furnished in both the hand and the combination hand and electric form, their weights being 27 lbs. and 35 lbs., respectively.

The concentric inertia starters are furnished in two sizes: that known as the Series VI, suitable for engines up to 1,350 cu. in. displacement, and the Series XI suitable for engines up to 2,500 cu. in. The Series VI weighs 17½ lbs. for land service and 19½ lbs. for marine, while the Series XI weighs 19 lbs. for land and 21 lbs. for marine.

Both the Series VI and the Series XI inertia starters are furnished as combination hand and electric inertia starters by the addition of an electric drive for accelerating the flywheels. This additional weight is approximately 9 lbs. The electric inertia starters have an advantage over the direct-cranking electric starters in that the electric load is a constant one, namely the acceleration of the flywheel, and temperature conditions or engine stiffness have no bearing on the amount of current consumption. In the case of the inertia starter the current consumption is extremely low. In the Series VI the average current of 120 amperes is used for from three to four seconds, while in the Series XI the same average current is used for from four to five seconds. At least 35 accelerations can be obtained from a 35 lb. battery without recharging.


15 ampere voltage regulated generator.

Generators may be had either for constant voltage regulation or current control. The control box is usually mounted directly on the generator, making the generator and controls a single integral unit. If desired, however, the control box may be mounted at any point in the ship, and connected to the generator in the usual way. These generators when engine driven include a flexible coupling between the drive shaft and the armature. They are also supplied for propeller drive when desired. Characteristic of this line of equipment are the 15 ampere, 15 volt generator, and the 25 ampere, 15 volt generator, weighing 18 and 20 lbs. respectively, complete with integrally mounted controls, for marine service (16½ and 18½ lbs. for land service).


Eclipse aviation hand starter with booster magneto integrally mounted.

SOUND-PROOF CABINS

A TURNING point in commercial aviation has been reached. Up to this time material has been inferior to and subordinated to personnel. Men were considered better, tougher and stronger than machines. No one ever thought a ship could wear out two tough, strong, experienced pilots and be ready to wear out two more. Yet, that is what Bellanca's ship has recently done in its record of staying up in the air for over fifty-one hours without refueling. Improvements are coming so fast that their advent is hardly noticed. Aircraft manufacturers of to-day have turned their attention to the comfort and pleasure of passengers as never before. The cabin plane is the plane of today just as the closed car is the car on the automotive field.

Aviation has reached over into the building trade to secure a comfortable, sound-deadened cabin. Balsam Wool, a wonderful sound-deadener and absorbent as well as an insulator against heat and cold, has made this possible. It is in reality a fluffy wood wool having a thermal conductivity equal to wool. It is flexible and weighs only 4 ounces per square foot in the 1" thickness. This light weight and flexibility make it ideal for aircraft. Both sides of the wool are covered with heavy Kraft paper, coated with asphalt thus rendering the material wind and waterproof. Balsam Wool will not support combustion, in fact, is highly resistant to fire.

It has been standardized on by two progressive aircraft manufacturers in enclosed cabin planes. The Plane Speaker Corporation, also, which has been experimenting in broadcasting with Fokker and Sikorsky ships over New York at heights ranging from 2,000 to 6,000 feet altitude, found that it was necessary to construct a light, soundproof broadcasting booth within the cabin of the plane so that noises could be eliminated. Balsam Wool was used for this purpose and the soundproof booth cut out all noise except the voices of the announcer and artist, with the result that reception on the ground was clear and distinct.

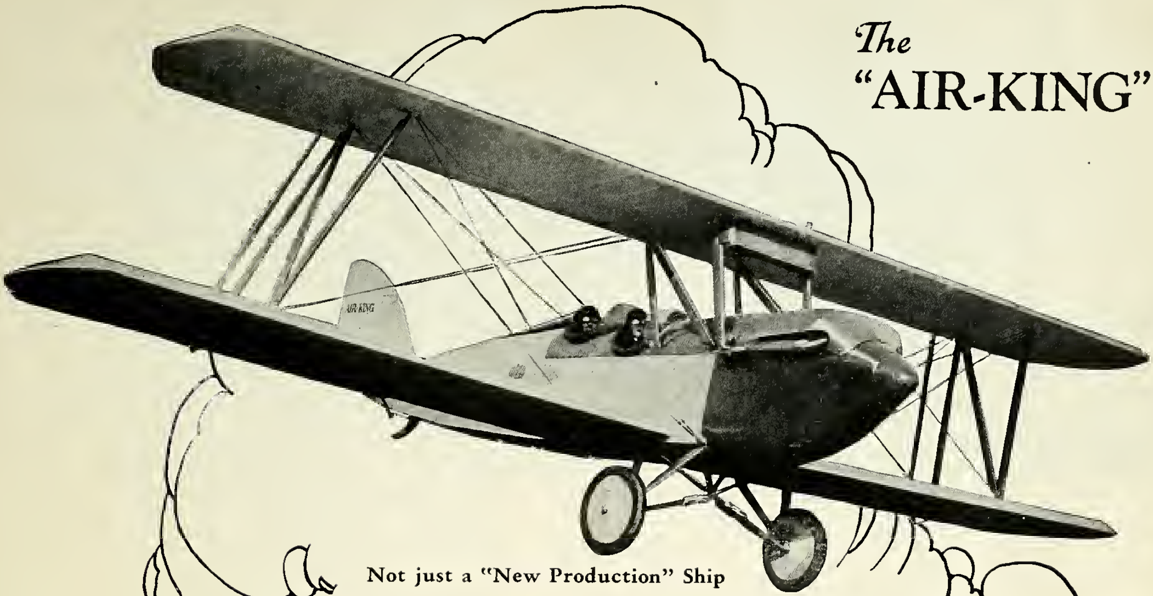
So we have one more improvement in aircraft, a relatively small thing, perhaps, but it is precisely these small improvements which are adding up to an impressive total.

1924 BIBLIOGRAPHY OF AERONAUTICS

THIS work, published by the National Advisory Committee for Aeronautics, covers the literature published from January 1 to December 31, 1924, and continues the work of the Smithsonian Institution issued as volume 55 of the Smithsonian Miscellaneous Collections, which covered the material published prior to June 30, 1909, and the work of the National Advisory Committee for Aeronautics as published in the Bibliography of Acronautics for the years 1909 to 1916, 1917, to 1919, to 1921, 1922 and 1923.

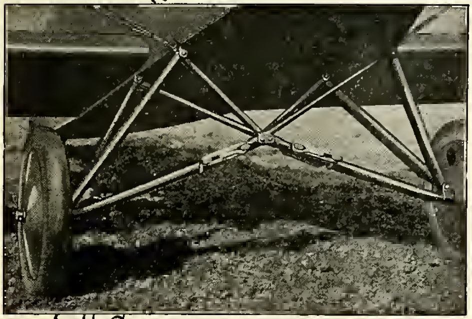
The Bibliography of Aeronautics, 1924, may be obtained direct from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 25 cents.

The "AIR-KING"



Not just a "New Production" Ship

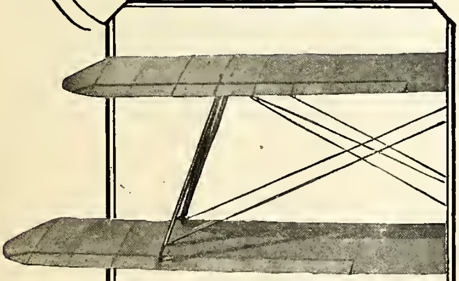
A Ship of Definite Advanced Improvements



Air-King design is the embodiment of every modern development tested and proven worthy. The shock-absorbing split-axle undercarriage of welded steel tubing, insuring safety and long life to ship and comfort to passengers—high aspect-ratio ailerons on all four wings, providing positive and immediate control with little physical effort—the horizontal stabilizer, adjustable in flight from the pilot's seat, compensating for varying loads—these are typical of Air-King thoroughness and refinement in design.

STRUCTURALLY and AERODYNAMICALLY SAFETY-BUILT

Air-King's built-in safety factor far exceeds requirements of the Air Commerce Act. Structural ruggedness throughout is exemplified in the sturdy built wings with routed box spars of unusual depth and built-up cross trussed ribs of seasoned spruce—the welded-in flying wire and under carriage fittings —wing-butt fittings of dependable proportions and practical design.



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$2100 F. O. B.
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CONVENIENCE AND COMFORT FOR PASSENGERS AND PILOT

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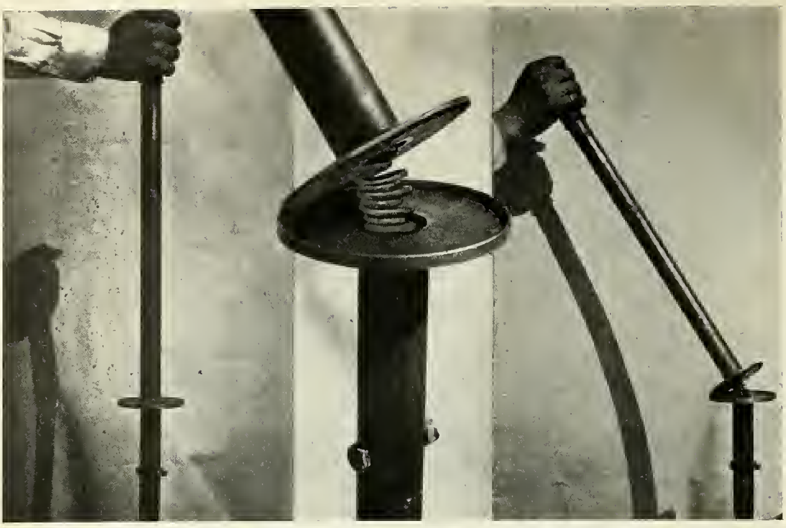


Spring stick for student-instruction developed by the Alexander Aircraft Company.

SPRING SAFETY STICK

DUE to the number of deaths that can be attributed to students "freezing" to the controls there has been developed by the Alexander Aircraft Company, Denver, through one of their experimental engineers, George Richten, a device whereby safety can be assured to both instruct pilot and student.

The Spring Stick is here pictured and generally described in order that other student flying fields may easily adopt same. The device is not patented but is offered to the flying world by the Alexander Company. Further details may be had upon application to the company.

The safety stick for student instruction consists of a short lower section of tube with a cupped disc flanging the upper end; an upper section of tube with flange at lower end and grip at upper end, and a spring inside of tubes fastened in tension between upper and lower tubes. The spring holds the flange on upper portion of stick tightly into the cupped flange on lower section. The tension is such that with ordinary flying maneuvers the stick remains straight and inflexible. In case the student becomes frightened or frozen to the stick in any position the instructor can easily maneuver his stick as the flexible joint in the student's control comes into play.

It has been tested for all positions for freezing. Joe Leonard as student took-off with stick in rear seat; Cloyde Clevenger, chief pilot of the Alexander Airport, as instructor in the front seat, had him "freeze" on a stall, in a dive, and wing low. Each time the ship could be recovered easily from the front cockpit with the pilot in the rear still "froze on". By taking the ship away by means of the stick, the trance of the "froze on" student would be broken and he would get off rudder naturally.

One position of particular value is in landing. When a student pulls back on the stick as he strikes the wheels, the ship bounces and the student generally keeps the stick "glued" back. If the student is on any tension it is hard to take the stick from him and prevent a high bounce. The use of this type of stick eliminates this trouble.

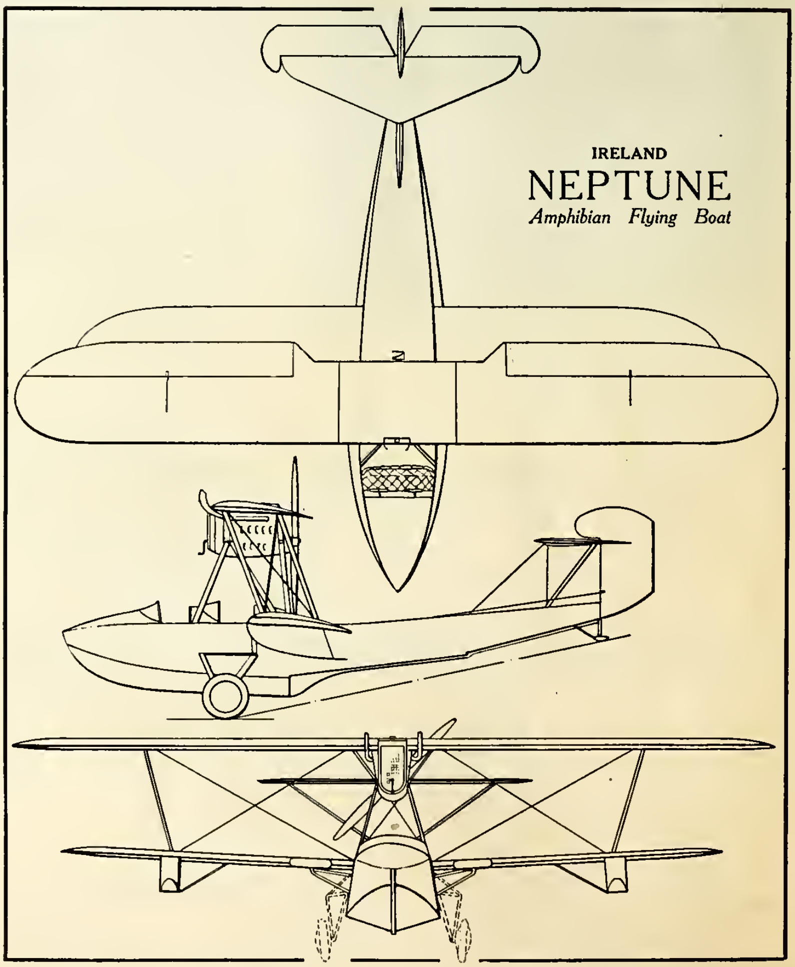
"I would not recommend the use of the stick for a solo flight but for instruction up to that point I feel that it is not only a big safety factor but also an actual aid to the instructor," said Mr. Clevenger.

EXAMINATION FOR SR. AERON. ENGINEER

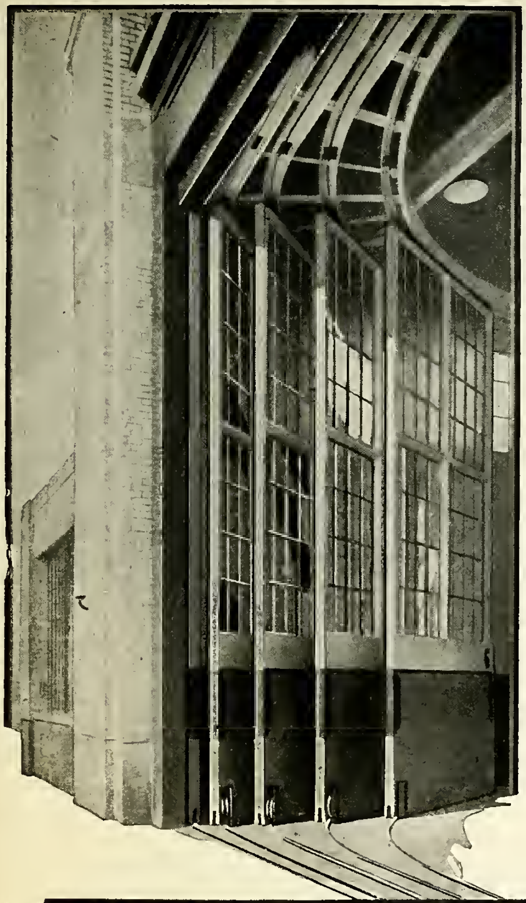
THE United States Civil Service Commission states that there is a vacancy in the position of Senior Aeronautical Engineer at the Langley Memorial Aeronautical Laboratory, Langley Field, Va., and that in view of the importance of the position in the field of aeronautical research, and in order to secure the appointment of a thoroughly qualified man for the work, an unusual method of competition will be followed to fill the vacancy. Instead of the usual form of civil service examination, the qualifications of candidates will be passed upon by a special board of examiners. The examination will consist solely of the consideration of qualifications of applicants by this special board.

The entrance salary for this position is $5,000 a year.

Qualified persons who wish to be considered for this vacancy should apply to the United States Civil Service Commission, Washington, D. C., for Form 2600, which must be executed and returned to the office of the U. S. Civil Service Commission at Washington, D. C., not later than June 14.



Drawings of the Ireland Amphibian, which is nearing completion at Garden City.



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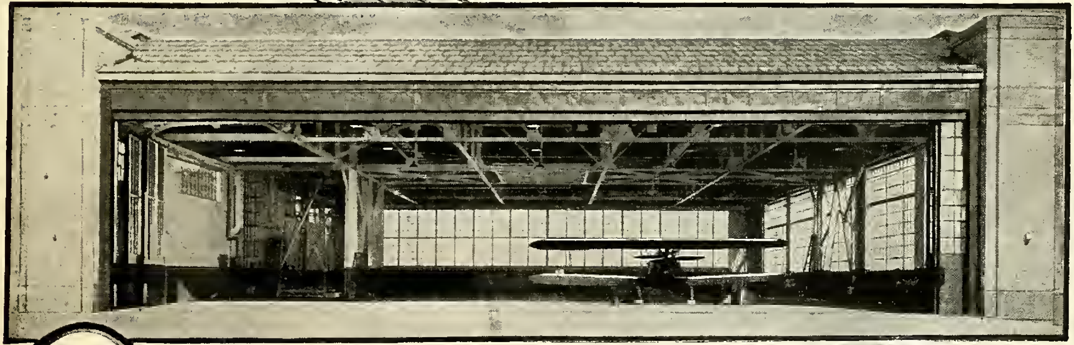

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WESTERN NEWS

AIR CARAVAN INVADES NORTHERN CALIFORNIA

By Frank E. Samuels

THROUGH the courtesy of the Aero Corporation of California and with Paul Richter, treasurer of the corporation, as pilot, I had the pleasure of making the Good-will Airplane Caravan trip into Northern California. The trip was planned and run under the auspices of the California Development Association. This is the first time in the United States that so many planes have participated in a strictly educational aviation boosting tour, visiting as we did six cities with 34 to 50 planes in the tour at all times. Not an accident of any kind marred the trip and nothing but good-will, with plenty of eats, prevailed throughout the entire tour.

On May 5th, ships from San Diego, Los Angeles and other cities were headed for San Francisco, where on the 6th the second convention of the California Development Association was held. There were both morning and afternoon sessions, with an educational, illustrated lecture on airways and air mail routes by Colonel H. H. Blee of the Department of Commerce at night.

On the 7th at 10 a. m. the new municipal field at San Francisco was dedicated. Mayor Rolph welcomed the visitors and pronounced the field officially opened.

Leaving San Francisco we headed across the bay for Sacramento, where we had lunch as guests of the Sacramento Chamber of Commerce. The next stop was Stockton, where one of the largest and most enthusiastic crowds of the entire tour greeted us. From Stockton we flew to Fresno and were entertained by the Fresno Chamber of Commerce with a banquet in the evening.

On leaving Fresno on the 8th a number of the planes dropped into Visalia, where they have just opened a new municipal field. Eddie Deeds, who has just taken a subagency for the Eaglerock plane, has charge of the field and the pilots, to wish him luck in his new venture, made an unofficial call. We were met by city officials and representatives of the press.

From Visalia we flew to Bakersfield, where we had lunch as guests of the Bakersfield Chamber of Commerce. After lunch the caravan was officially disbanded and the planes headed for their home ports.

The Army and Navy were represented on the tour by a Douglas transport, a number of Douglas observation planes, a bomber, two DHs, two Voughts, one amphibian, and three Curtiss Hawks, all of which made the the entire tour. Five of the reserve squadron from Crissy Field flew with us in formation from San Francisco to Sacramento and from Sacramento to Fresno. Lieuts. Williams and Miller, of the Griffith Park reserve station, flew over the entire route.

Among the commercial planes that made the trip on part or on the entire tour were six Eaglerocks, two Wacos, one International Aircraft Corporation three-place commercial plane, one OX5 Travel Air and a Travel Air monoplane, one Fokker Universal, one Ryan M 1 Monoplane, one Swallow, one Kinner Sport plane, the little midget "Wasp," one Martin R. and a number of Jennies.

Col. Harry Graham, commander of Rockwell Field, Comdr. Montgomery of the Naval Air Station at San Diego and Postmaster Dort flew over the entire course in government ships from San Diego, and were called upon in every city for speeches. Col. H. H. Blee, of the Department of Commerce, flew over the route in a Ryan M 1 Monoplane.

Dr. T. C. Young, chairman of the Aeronautical Unit of the California Development Assn., led the parade from town to town in his little Kinner plane and was one of the principal speakers in each town visited.

One of the pretty sights was the three Eaglerocks, headed by the Aero Digest press plane, flying in V formation from San Francisco to Sacramento, circling the fields and landing in military order.

The mayor of each city greeted the visitors with a welcome speech at the lunch or banquet given by the Chamber of Commerce of that municipality.

Lieut. Thomlenson of the San Diego air base flew his own OXX Jenny over the entire route and at no time was he over 500 feet above the tree tops. Skimming along the highways, he was one of the first to land. If there is another flyer that has the confidence that Thomlenson has in his motor and plane we have yet to meet him. Planes can't fly too high or too close to the ground to suit him, as his duties at the air base are to test planes at all heights.

The Pacific Air Transport's Universal Fokker made the entire trip with four officers of the caravan, and the big Douglas transport also made the entire trip with a full compliment of passengers. Both planes were the center of attraction on all fields.

Three Curtiss Hawks gave a wonderful acrobatic and combat exhibition in every town visited, except at Bakersfield, where the committee requested Paul Richter of the Aero Corp. of Calif. to put his Eaglerock through its paces, which he did to the delight of the thousands of spectators.

J. B. Alexander, sales manager of the American Aircraft Corporation, in his demonstration Waco was well received along the route and was right up with the leading planes at every stop.

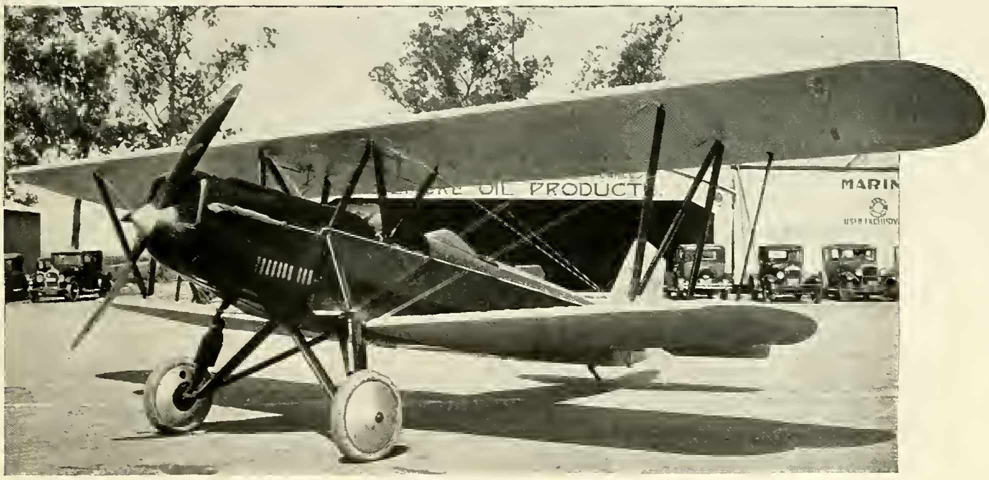
D. C. Warren, West Coast representative of Travel Air, and James L. Mayberry, Northern California agent for Eaglerock, flew their demonstrators over the route.

H. A. Spear, vice-president and sales manager of the International Aircraft Corp., flying a new International F-18 four-place job, which was finished just in time to start on the trip, gave very interesting demonstrations of its maneuverability at each port of call. The plane created considerable interest among the flying fraternity.

Great credit should be given Frank McKee, secretary of the Aeronautical Committee of the California Development Assn., for his untiring efforts in making the tour and the convention the great success that it was from start to finish. It has done more to create interest and gain the confidence of the general public than any event ever promoted in California. A trip of this kind every year, visiting different cities, will put the state of California where it should be aeronautically—among the leading states.

Loading the "Aero Digest Press Plane" (Eaglerock from the Aero Corp. of Calif.) with magazines to distribute while on the Calif. Development Assn. Air Caravan.

Antiquating All Previous Standards of Airplane Construction



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Write for particulars

Lt. Deeds, Visalia airport owner, and Manager Martin, Fresno and Bakersfield ports.

POWDER RIVER FLYING CLUB OPENED

THE new club house of the Powder River Flying Club was formally opened on May 8th. Addresses were made by Lieut. Russell Maughan, famous "dawn-to-dusk" flyer, former Gov. B. B. Brooks, Congressman Charles E. Winter, Mayor John T. Scott, and Major D. P. Wardwell. A review of headquarters troop, 58th cavalry brigade, Wyoming-Idaho National Guard, and an aerial parade and stunts were additional features of the program.

J. Don. Alexander, president of the Alexander Aircraft Corporation of Denver, accompanied by Pilot C. P. Clevenger, and Lieuts. V. D. Stone, R. M. Wilson, H. G. Sweet, G. A. Roberts, J. D. Hissong, and L. O. Scott, of the Colorado National Guard unit, were among those who attended the opening.

The officers of the Powder River Flying Club are: D. P. Wardwell, president; Burke H. Sinclair, first vice president; Walter Storrie, second vice president; J. E. Davis, secretary, and Lee Townsend, treasurer. B. G. Westover, Kemmerer; R. L. Copsey, Thermopolis; E. C. Delgarde, R. Leferink, R. H. Nichols and George Jarvis, directors.

The Powder River Flying Club was formed recently as a non-profit, social, recreational and educational club for the purpose of promoting aviation. At the present time there are approximately 120 members of all classifications, flyers and non-flyers, both resident and non-resident.

A standard J-1, 180 horsepower Hisso motor, training plane is owned by the club and as soon as sufficient funds from initiation fees are collected a new Eaglerock plane will be purchased for advance training.

GORDON BENNETT BALLOON RACE AT DENVER

THE 1927 Gordon Bennett Balloon Race will be held September 10th in Denver, Colorado, under the auspices of the Denver Chamber of Commerce, Denver Tourist Bureau, and the Denver Chapter of the N. A. A. Five European countries, Germany, France, Italy, England, and Switzerland have entered a total of nine balloons for this contest, in addition to the three American which will be selected as a result of the National Elimination Balloon Race for the Litchfield Trophy to be held at Akron, Ohio, May 30th. Entries close June 1st.

VISALIA AIRPORT

THE Visalia, California Municipal Airport was formally opened on April 3rd, and the Alexander Eaglerock which recently was purchased by Ed F. M. Deeds and Sol Sweet from W. L. Lamkin, Eaglerock distributor for Northern California, was christened "Miss Visalia".

The new Visalia Airport, 80 acres in area, is centrally located on the main state highway at an important intersection and only four and a half miles from Visalia. Visalia is exactly halfway between Los Angeles and San Francisco, and it is expected the new airport will attract much air travel. The airport is well-marked and will soon be equipped with lighting facilities. Sweet and Deeds are specializing in aerial photography and instruction work. All ships passing through the San Joaquin Valley are cordially invited to "set down" at the Visalia Airport, where they will find service with a capital "S".

NORTHWEST AIR NEWS

By F. K. Haskell

THE new monoplane built for the Pasco division of the transcontinental air mail was flown to Pasco from Boise by Chief Pilot Leon J. Cuddeback of the Varney organization. The plane was designed by Engineer Northup of the Douglas airplane factory at Santa Monica, Calif. It was built by the Breeze-Wilde factory at San Francisco and is the first plane of the new design. It has a wing spread of forty-two feet with the wings seven feet wide and has a gasoline carrying capacity of eighty gallons. The pilot is located in a cockpit above the wings and will have an excellent view.

A bid of the Anchorage Airplane Company for special mail service between Nenana and Nome during the period of the ice breaking up and spring thaw has been accepted and the contract awarded. The service is to be operated under the territorial subsidy of $50,000 voted by the last legislature.

Alexander Eaglerock final assembly personnel and a group of completed ships ready for delivery.

Mr. Airline Operator:—

May we demonstrate to you the safety, economy and comfort of our tri-motor, eight place Air Yacht?

L. Morton Bach

BACH AIRCRAFT COMPANY
Clover Field Santa Monica
California

CONTACTS

By Frank E. Samuels

LEE SCHOENHAIR, formerly connected with the Ford Airlines, has just bought a Stearman job. Lee intends to enter the Ford Reliability Tour.

Lloyd Stearman, Fred Hoyt, and George Lyle of the Stearman Aircraft Co. took the Department of Commerce tests for transport pilot's license lately. They successfully passed the flying tests but are awaiting with misgiving the results of the mental exams.

Burdett Fuller of the Burdett Airlines has just taken delivery of his first four-place International Aircraft Corp. plane. This plane is the one that made the tour of northern California cities with the Caravan, and will be used for demonstrating and passenger carrying, Burdett being the Los Angeles agent for the International.

On May 16, Rogers Airport gave commercial aviation another boost. On that date the Paramount Convention started in San Francisco. The *Los Angeles Evening Herald,* desiring to have copies of their paper of the same date at the convention and it being impossible to do so by train, made arrangements to send them by plane. The plane was loaded to its capacity with papers and in less than five hours from the time they were on the press, they were delivered at the convention, 400 miles from start. The plane used was the Rogers Airport Travel Air, flown by Eddie Bellandi.

One of the high lights of the trip up north with the Caravan, and the one I enjoyed most, was an over-night stop at the farm near Capitola with Paul E. Richter, Sr., father of Paul of the Aero Corporation of California.

Speaking of Coalinga, there is a live wire there who is the Standard Oil representative, D. Millerien, a man who is catering to the flyers. A plane only has to circle over the little town before landing and before they touch the ground on the up-to-date landing field there will be gasoline, oil, water, and drinking water, with an automobile to take the flyers up-town for lunch, if they care to go. Any flyer making the trip from Los Angeles to San Francisco cannot do better than to go by way of Coalinga. It is the most direct and nearest route, and even if it were not, it would pay to go a few miles out of one's way to receive the service.

Stanley Short of Short's School of Aviation has just taken delivery of one of the Bach new four-place cabin planes, powered with a 180 Hisso motor. The plane is to be used for long distance and passenger flights.

Clarence "Ace" Brogonia is now associated with Dycer Airport as student instructor. "Ace" needs no introduction to flyers in California, as many of the pilots of the present airports are former students of his. He has been connected with aeronautics for the past nine years, being located in Detroit for the past two years. "Ace", is well qualified as student instructor, test pilot and for cross-country flights, and should be highly successful in his connections with Dycer Airport, which reports unusual activities with student pilots, having 20 students in various stages of progress. The Dycer Sport Plane was recently bought by H. B. Stratton of Los Angeles who is now receiving flying training at Dycer Airport.

Daddy Montee, dean of California flyers, has just passed the flying tests of the Department of Commerce for transport pilots' license with a record of 100 per cent. The flyers are contemplating presenting him with a medal or pair of wings with their good wishes.

Ruth Law, the noted aviatrix, can be seen almost every day at Clover Field, Santa Monica, not pursuing the game as a professional, but as she and her husband say: "We are just getting the hang of the modern planes to have a good time flying together."

Dr. T. E. Young of Glendale has just taken delivery of his Kinner Special biplane, powered with a 300 Hisso motor. Three different pilots have already flown the plane and at the first flight the pilot flew hands off of the controls, showing the perfect balance of the ship. The first pilot or test pilot was Walter Hengst, ex-mail pilot, who was stationed at Marsh Field during the late war. Dr. Young is more than pleased with his latest ship and pronounces it "the prettiest plane ever built by the Kinner Airplane and Motor Corp."

Lieut. W. Jack Frye, president of Aero Corp. of Calif. and sponsor of new Los Angeles-Dallas Airline, left by airplane May 6th for Hasbrouck Heights, N. J., presumably to obtain ships and equipment for the new line.

The New

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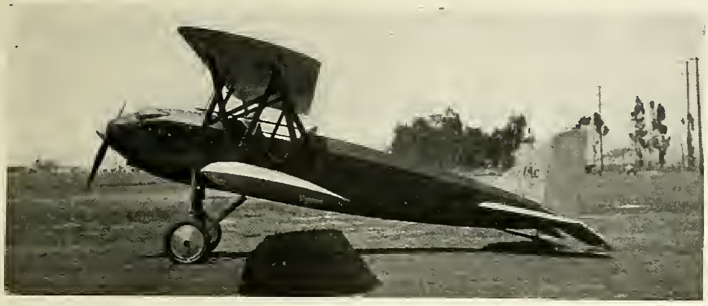

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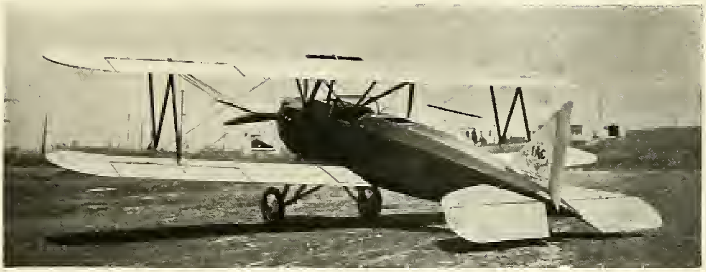

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RED CROSS AIR MEET

ABOUT 25,000 persons witnessed the Air Carnival at Clover Field on May 22 which was staged for the benefit of the Red Cross Mississippi relief fund.

The air meet started with a Jenny scramble in which Art Goebel, was the victor. He also won the upside-down flying contest.

Other events included a parachute jump from a plane by "Stub" Campbell; an altitude race won by Paul Richter of the Aero Corp., of Calif., who climbed to an altitude of 2500 feet in 6 min. and 12 sec. in an Eaglerock plane; a high speed event in which Art Goebel flew 25 miles in 15 min. 58¾ sec.; an "up-stick" contest, won by B. Kinner of the Kinner Aircraft Corporation, who took off 87 feet from his starting point. Ivan Unger thrilled the crowd by changing from one plane to another while both were traveling at high speed.

An exact replica of the Ryan monoplane in which Capt. Lindbergh made his amazing flight from New York to Paris was exhibited by William H. Bowlus of San Diego, designer and builder.

Captain Nungesser's famous plane that he piloted in the World War was wheeled out on the field and a formation of Army planes then flew overhead and dropped roses on the plane.

The carnival was judged by Lieut. W. K. Burgess, field marshall of the day; Capt. P. D. Moulton, flight surgeon, Clover Field; Dr. T. C. Young, Major C. C. Moseley, F. E. Samuels, AERO DIGEST West Coast representative, Earl W. Chubb and Donald Douglas of the Douglas Aircraft Corporation.

Fuel and oil for the planes entered was donated by the California Petroleum Corporation which was one of the sponsors of the carnival. Other organizations which helped to promote it were the Air Corps Reserve, the Sunset Air Lines and the Los Angeles Red Cross.

THE PACIFIC FLIGHT

A PRIZE of $25,000 to the first and $10,000 to the second airman to fly from the North American coast to Honolulu, has been offered by James D. Dole, president of the Hawaiian Pineapple Company. Such a flight involves a distance over water 400 miles longer than the Newfoundland-Ireland hop made by Captain Charles A. Lindbergh.

Another prize of $30,000 has been offered by Sid Grauman of Hollywood, California, for a non-stop flight from Los Angeles to Tokyo, Japan, about 5,000 miles.

SANTA ANA AIR MEET

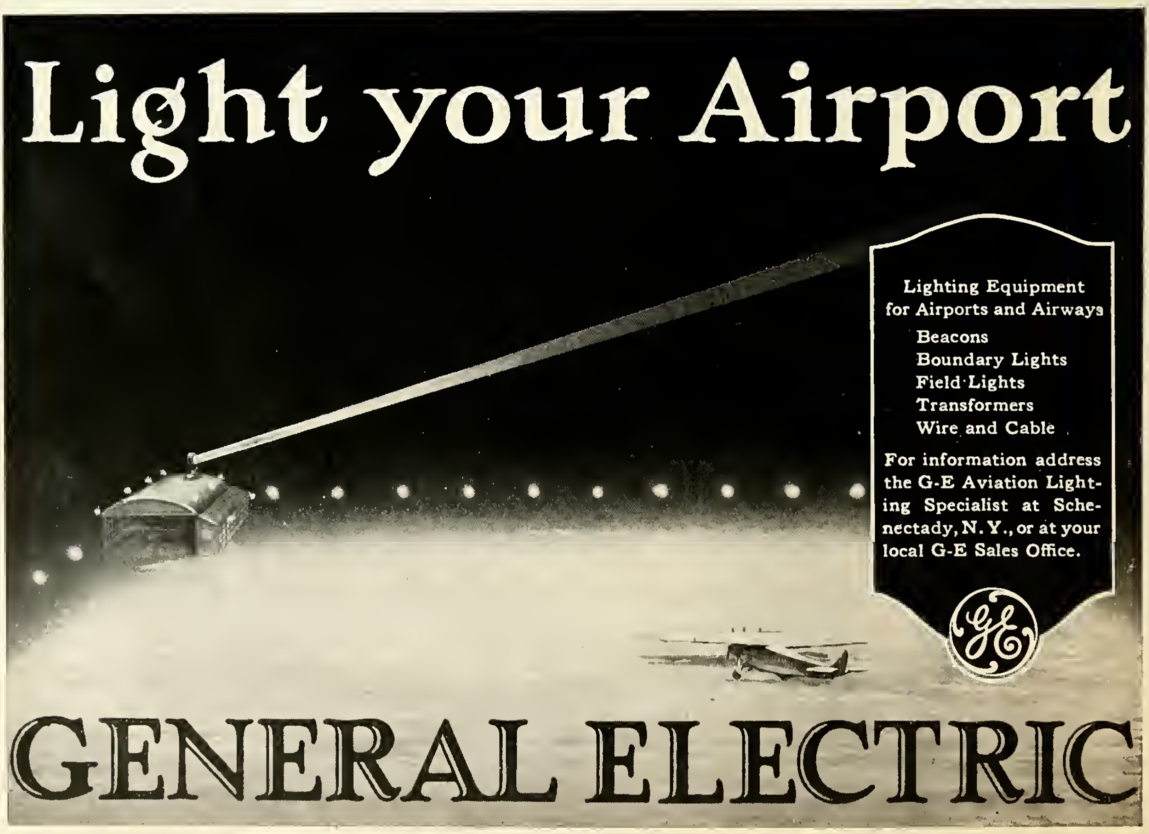
A BIG air meet will be held at Santa Ana, California, on July 2, 3 and 4 under the auspices of the Aero Club of Santa Ana. Over ten thousand dollars has been collected to finance the meet. The proceeds from the meet will be used to start the Santa Ana municipal air field. There will be all kinds of aerial contests with big prizes for the winners of events.

BANQUET FOR DAVISON

ONE of the biggest aeronautical events ever held in Los Angeles was the reception and banquet at the City Club on May 28 tendered the Hon. F. Trubee Davison, Assistant Secretary of War for Air, and his staff, under the joint auspices of the Air Corps Reserve Officers Association and the N. A. A. Chapter of Southern California.

Over 250 leaders of the industry were present. The meeting was presided over by Lieut. Governor Pitts with the following speakers: Donald Douglas of the Douglas Company; Major Mosely of Western Air Express; Earl Ovington, veteran flyer and mail carrier; William Frye, president Long Beach Aero Club; Earl Dougherty; Captain Archibald; Councilmen Paul and Shaw of the Aviation Committee of the City Council; Lieut. Eric Nelson and Leslie Arnold, round-the-world flyers; Dr. Ford Carpenter of the Chamber of Commerce; Lieut. Walter Burgess, commander of Clover Field; Colonel Green; Lieut. Hammel; Councilman Evans of the Ninth Congressional District; Commander Scaroni of the Italian Air Force, and F. Trubee Davison. More than twenty other notables were introduced too late for speaking.

Earl Dougherty was presented with a leather medal for washing out his landing gear in trial for pilot's license and Councilmen Paul and Shaw assured the flyers that Los Angeles would secure ground for one of the largest air fields in this country within the next sixty days.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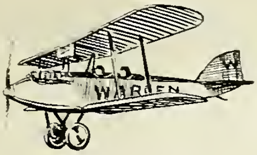

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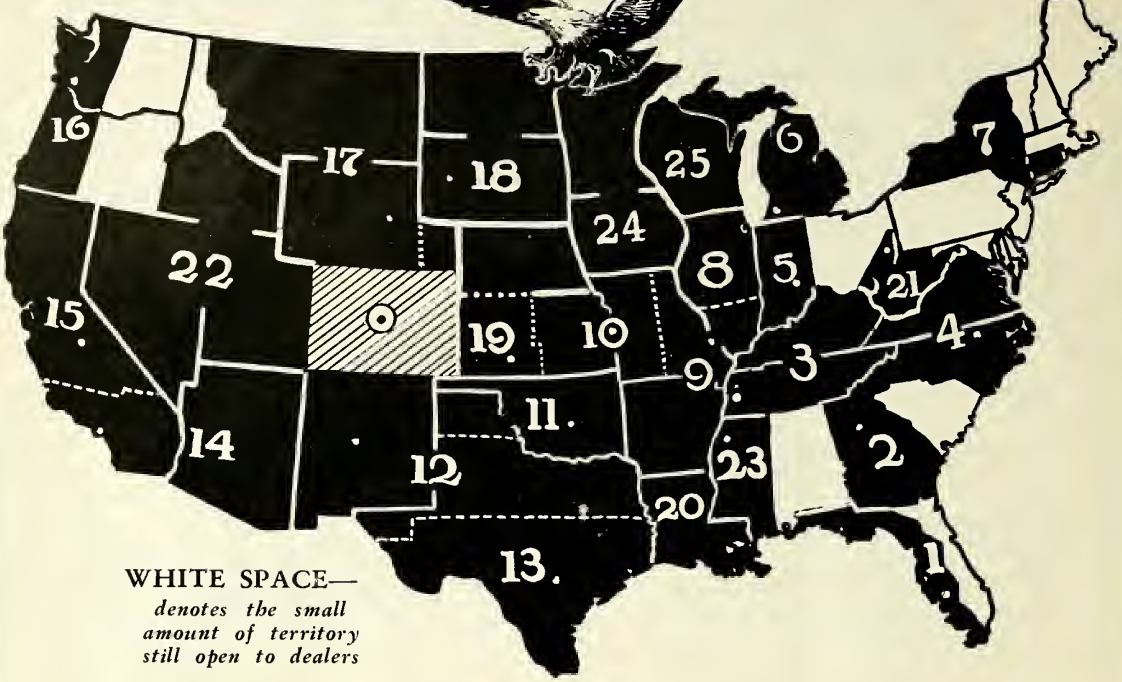

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5. Indiana—*Captain J. A. Yonge, Box* 1185, *Indianapolis, Ind.*
6. Michigan—*Niles Airways, Niles, Michigan.*
7. N. Y. and Conn.—*T. D. S. Aerial Service Inc.,* 35 *West 23rd St., New York City*
8. Ill. and So. Wisc.—*Sievert Aircraft Corporation,* 5934 *S. Cicero, Chicago, Ill.*
9. E. Mo., Ark. and So. Ill.—*Bridgeton Aircraft Corp.,* 223 *Pierce Bldg., St. Louis.*
10. W. Mo. and E. Kan.—*Bennett Eaglerock Sales Co.,* 223 *W. 12th St., Kansas City, Mo.*
11. Okla. and Texas Panhandle—*Southwest Airplane Sales Corp., Route No.* 1, *Britton, Okla.*
12. New Mexico and Central Texas—*Swastika Eaglerock Airways,* 312 *Columbia, Albuquerque, N. M.*
13. Southern Texas—*Marion P. Hair, Box* 420, *San Antonio, Texas.*
14. So. Cal. and Ariz.—*Aero Corp., of Cal., Western Ave., at 99th St., Los Angeles.*
15. Northern California—*James L. Mayberry,* 1210 *Broadway, Fresno, California.*
16. W. Washington and W. Oregon—*Story Eaglerock Sales, Seattle, Washington*
17. Wyoming, Montana and Western Nebraska—*Wyoming Airways, Casper, Wyoming.*
18. So. Dakota and No. Dakota—*Rapid Air Lines, Rapid City, South Dakota.*
19. Western Kansas and Eastern Nebraska—*C. E. Steele, Dodge City, Kansas.*
20. La.—*Louisiana Airways,* 1712 *Pere Marquette Building, New Orleans, La*
21. W. Virginia and E. Ohio—*Lyle E. Scott,* 328 *2nd St., Marietta,* Ohio.

22—Utah, Nevada, So. Idaho—*Rocky Mountain Airways, Salt Lake City, Utah.*

23. Mississippi—*Tri-States Airways, Bry Block Mercantile Co., Memphis, Tenn.*
24. Iowa and Minneota—*Miller Eaglerock Airways,* 1225 *W. 12th, Des Moines, Iowa.*
25. Wisconsin—*Hall Aircraft Company,* 101 *Scott Street, Wausau, Wisc.*

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PERFORMANCE WITH ECONOMY

NEWS OF THE AIR SERVICES

President Coolidge greets the Pan-American Good Will flyers at Bolling Field on May 2 at the end of their four months' flight of 20,000 miles when they were awarded the Distinguished Flying Cross.

AIRMEN SAVE LIVES IN GREAT FLOOD

AIRPLANES and airmen have played important rôles in the greatest flood in the history of the Mississippi Valley. The Army Air Corps, National Guard and Navy pilots and observers performed wonderful and heroic work in the flooded area, carrying food, vaccine, doctors and Red Cross nurses to refugee camps and people marooned in remote localities. Scores owe their lives to the flyers.

The 154th Observation Squadron, Arkansas National Guard, commanded by Major Asbury W. Meadows, operated from Little Rock to Memphis and over the surrounding territory. Of the seventeen planes of the Army Air Corps being used in flood relief work, five DHs, piloted by regular Army Air Corps officers, were sent to Little Rock to coöperate with the National Guard. Four army training planes from the Air Corps training center in Texas were assigned for relief work, these being piloted by National Guard airmen.

The remaining eight airplanes, one each from Chanute Field, Rantoul, Illinois; Maxwell Field, Alabama; McCook Field, Dayton, Ohio; Bolling Field, Anacostia, D. C.; Scott Field, Illinois and three from Wright Field, Dayton, Ohio, were dispatched to Memphis to make aerial photographs of the flooded area for the Mississippi River Commission.

Lieutenant Bob E. Nowland of Bolling Field piloted the only amphibian plane engaged in the relief operations. Lieutenant Nowland has been flying from six to eight hours each day, carrying officers of the Corps of Engineers on inspection trips to examine flooded areas and locate breaks in levees.

Thirty-one seaplanes from the Naval Air Station at Pensacola under command of Commander Warren G. Charles were sent by Captain Upham, commander at Pensacola to aid in the rescue work.

ALTITUDE RECORD MADE BY CAPT. GRAY

THE highest altitude ever attained in any aircraft—42,470 feet—was reached by Captain Hawthorne C. Gray, of the Army, May 4, in a free balloon over Scott Field, Ill.

This is 1,650 feet higher than the official altitude record for airplanes, now held by M. Callizo, a French aviator, and 7,037 feet higher than the official altitude record for free balloons, made by the German aeronauts, Suring and Benson.

Captain Gray's first attempt on March 9 last to establish a new record proved unsuccessful, although he reached 28,510 feet and broke the American record.

The duration of the recent flight was one hour and 57 minutes, the ascent commencing at 1:33 p. m., and the hour being 3:30 when his feet again touched the ground. The balloon took off with 3,800 pounds of sand ballast, and the rate of ascent for the first 5,000 feet varied between 500 and 700 feet per minute. For the next 20,000 feet the rate of ascent averaged approximately 800 feet per minute, and from then on was reduced to 500 feet per minute.

No dizziness, symptoms of distress, lack of pressure or lack of oxygen were experienced by Captain Gray until an altitude of 40,000 feet was reached. The eye pieces of his gas mask had become almost entirely coated with frost, and visibility was possible only through a space about the size of a nickel, which remained clear.

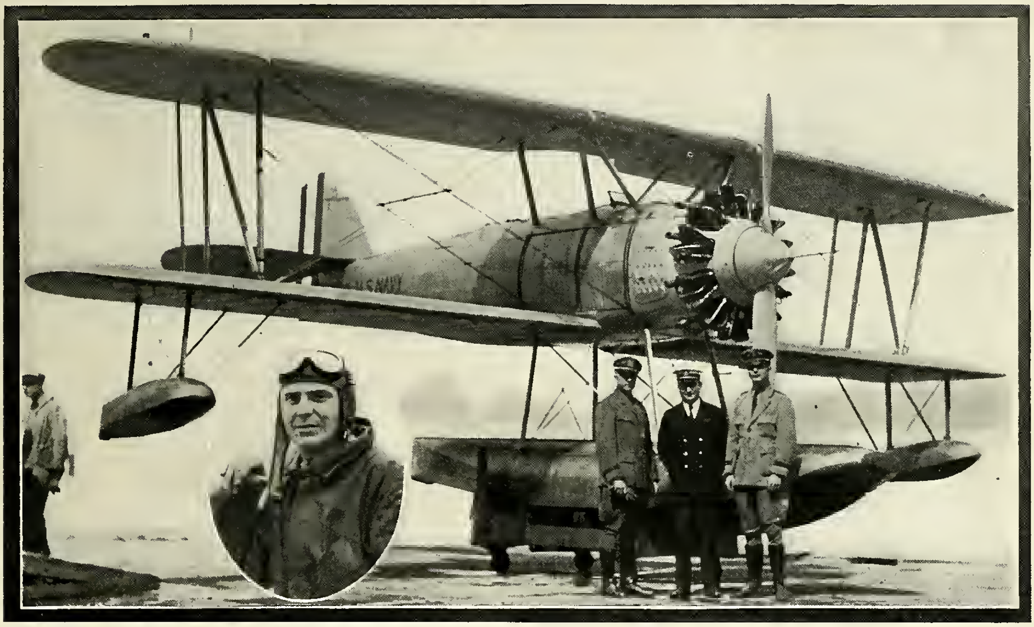
At 40,000 feet the rate of ascent slowly decreased, and desiring to attain a still higher altitude the pilot dropped one of the oxygen cylinders overboard attached to a parachute.

Experiencing symptoms of distress the pilot, acting under instructions which had been given him prior to the flight by medical officers, opened the valve for approximately three second, and the balloon started to descend rapidly, between 1,400 and 1,900 feet per minute. No further ballast being available when the balloon had dropped to about 8,000 feet, and still falling very rapidly, the pilot climbed to the edge of the basket and jumped. The parachute opened perfectly without delay.

A radio set was carried as part of the equipment, and Captain Gray reported excellent reception to an altitude of 35,000 ft., when the broadcasting station signed off.

Officers of the Arkansas National Guard who are aiding flood sufferers.

Standing, left to right: Capt. Dave W. Wiegel, Lt. Joe Shumate, Lt. James Youngblood, Capt. Murray Hall, Lt. Griffin McSwine, Maj. Asbury W. Meadows, Lt. Adrian Williamson, Neil G. Romich and Robert W. (Bob) Chrisp. Kneeling: Lts. Hunter D. Scott, Benton Brandon, Vivien M. Culver and Robert McCarroll and Wright "Ike" Vermilya.



Lieuts. J. D. Barner, G. R. Henderson, S. W. Callaway and (Insert) R. Irvine, U. S. N., with the "Corsair."

FOUR WORLD'S RECORDS

FOR THE NEW VOUGHT *"CORSAIR"*

ALTITUDE

A Standard Vought "Corsair" Naval Seaplane, on April 14, 1927, reached a record altitude of **22,178** feet, carrying a ballast load of 1102 lbs., included in the total useful load of 1640 lbs. Lieut G. R. Henderson, U. S. N. Pilot.

SPEED—100 KILOMETERS

The same seaplane, on April 25, 1927, with the same ballast load included in the 1675 lbs. useful load, averaging **147.263** miles per hour for 100 kilometers around a 25 kilometer closed course. Lieut. S. W. Callaway, U. S. N. Pilot.

SPEED—500 KILOMETERS

On April 30, 1927, the same "Corsair" seaplane flying around the same short 25 kilometer course, averaged **136.023** miles per hour for 500 kilometers, carrying 1880 lbs. useful load including 1102 lbs. ballast. Lieut. J. D. Barner, U. S. N. Pilot.

SPEED—1000 KILOMETERS

And still a fourth World's Record was made by the same "Corsair" seaplane on May 21, 1927, when an average speed of **130.93** miles per hour for 1000 kilometers was made over the same closed course! Lieut. Rutledge Irvine, U. S. N. Pilot.

The "Corsair" is designed around the P. & W. "Wasp" Engine

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ARMY AND NAVY AIR SERVICE ORDERS

ARMY AIR CORPS ORDERS

THE following Army Air Corps orders have been issued as of the dates indicated in brackets:

Allison, 2d Lt. Dixon A., from Langley Field, Va., to March Field, Riverside, Calif. (May 7)

Baker, 2d Lt. William E., from Fort Crockett, Tex., to Brooks Field, San Antonio, Tex. (May 7)

Barnes, 2d Lt. Earl W., from Fort Crockett, Tex., to March Field, Riverside, Calif. (May 7)

Barnett, Capt. William E., relieved from duty in the Air Corps, assigned to duty with the Fifth Cavalry, Fort Clark, Tex. (May 23)

Baucom, Capt. Byrne V., from Bolling Field, D. C., to March Field, Riverside, Calif. (May 7)

Bevans, 1st Lt. James M., F. A., from Marshall Field, Fort Riley, Kans., to March Field, Riverside, Calif. (May 7)

Bradley, 2d Lt. Clifford P., from Selfridge Field, Mt. Clemens Mich. to Brooks Field, San Antonio, Tex. (May 7)

Bridget, 2d Lt. Bernard A., from Langley Field, Va., to Brooks Field, San Antonio. (May 7)

Bryte, 2d Lt. Walter G., Jr., from Crissy Field, Presidio of San Francisco, Calif. to Brooks Field, San Antonio Tex. (May 7)

Burt, 1st Lt. Byron T., Jr., relieved from assignment at Langley Field, Va., assigned to station at March Field, Calif. (May 23)

Cheatle, 2d Lt. Frances E., from Wright Field, Fairfield, Ohio, to Brooks Field. (May 7)

Chidlaw 2d Lt. Benjamin W., promoted to 1st Lt. (May 11)

Cobb, 2d Lt. Richard E., from Boston, Mass., to Langley Field, Hampton, Va. (Apr. 25)

Colliver, 1st Lt. Harry E., from Langley Field, Va., to Kelly Field, Tex. (May 7)

Cook, 1st Lt. Frank L., from Middletown air intermediate depot, Middletown, Pa., from Kelly Field, Tex. (May 7)

Crane, 2d Lt. Carl J., from Selfridge Field, Mt. Clemens, Mich., to Kelly Field, Tex. (May 7)

Davasher, 2d Lt. Glenn L., from Post Field, Fort Sill, Okla., to Brooks Field, Tex. (May 7)

Dawson 2d Lt. Leo H., relieved from assignment at Chanute Field, Ill., to report for duty at Brooks Field, Tex. (May 23)

Dawson, 2d Lt. Wallace S., from Langley Field, Va., to March Field, Riverside, Calif. (May 7)

Day, 1st Lt. Robin A., leave of absence 2 months and 22 days. (May 18)

Deerwester, 2d Lt. Charles H., from Selfridge Field Mt. Clemens, Mich., to Brooks Field, San Antonio, Tex. (May 7)

Denniston, 2d Lt. Joseph C. A., from Maxwell Field, Montgomery, Ala., to Brooks Field, San Antonio, Tex. (May 7)

Dulligan, 2d Lt. John H., from Aberdeen Proving Ground, Aberdeen, Md., to March Field, Riverside, Calif. (May 7)

Dunford, 2d Lt. Donald, from duty with Second Division, Fort Sam Houston, Tex., to 17th Infantry, Omaha, Nebr. (May 13)

Dyer, 2d Lt. Harvey F., from Marshall Field, Fort Riley, Kansas, to Brooks Field. (May 7)

Elliott, 2d Lt. Lawrence C., from Selfridge Field, Mt. Clemens, Mich., to Brooks Field. (May 7)

Erickson, 2d Lt. Wilbur, from Omaha, Nebr. to Selfridge Field, Mich. (Apr. 29)

Fernsten, 1st Lt. Edward L., relieved from assignment at Air Corps Primary Flying School, Brooks Field, San Antonio, Tex.; report to Commanding General, Fort Sam Houston, Texas. (May 12)

Fisher, 2d Lt. Ralph E., from Marshall Field, Fort Riley, Kans., to March Field. (May 7)

Fitz Gerald, Maj. Shepler W., from duty in office of Chief of Air Corps, to Brooks Field, San Antonio, Tex., to duty. (May 13). From office of Chief of Air Corps, to McCook Field, Dayton, Ohio, to consider airplane designs for National Guard use and to report on winners of sealed bids. (May 17)

Flannery, 1st Lt. James, from Fairfield, Ohio to San Antonio, Tex. (Apr. 26)

Foster, 1st Lt. Thad. V., from Langley Field, Va., to Kelly Field, Tex. (May 7)

Fritch, 1st Lieut. Donald F., F. A., from Mitchel Field, L. I., N. Y., to Brooks Field. (May 7)

Gehlbach, 2d Lt. Lee, from Selfridge Field, Mt. Clemens, Mich. to Kelly Field, Tex. (May 7)

Giles, 1st Lt. Barney M., Fairfield air intermediate depot, Fairfield, Ohio to McCook Field, Dayton, Ohio, to consider airplane designs for National Guard use and to report on winners of sealed bids. (May 17)

Gilkey, 2d Lt. Signa A., from Chanute Field, Ill., to Brooks Field San Antonio, Tex. (May 7)

Glascock, 1st Lt. John R., from Crissy Field, Presidio of San Francisco, Calif., to Kelly Field, Tex. (May 7)

Glenn, 2d Lt. Albert F., from Mitchel Field, L. I., N. Y., to Brooks Field, San Antonio. (May 7)

Goolrick, Maj. Robert E. M., leave of absence 1 month 15 days. (May 10)

Guillett, 2d Lt. John F., from Fort Crockett, Tex., to Brooks Field, San Antonio, Tex. (May 7)

Gullet, 1st Lt. John S., from Bolling Field, D. C., to March Field, Riverside, Calif. (May 7)

Harper, 2d Lt. Robert W., from Inf. Third Attack Group, Fort Crockett, Tex., to Brooks Field, San Antonio, Tex. (May 7)

Harvey, 2d Lt. Alva L., from Langley Field, Va., to Brooks Field, San Antonio, Tex. (May 7)

Hawkins, 2d Lt. John R., from Langley Field, Hampton, Va., to Brooks Field. (May 7)

Hayward, 1st Lt. William A., from Langley Field, Hampton, Va., to Kelly Field, Tex. (Apr. 25)

Heffernan, Maj. Leo G., leave of absence 1 month. (Apr. 29)

Henry, 2d Lt. George E., from Crissy Field, Presidio of San Francisco, Calif. to March Field, Riverside, Calif. (May 7)

Hewins, 2d Lt. James, Jr., from Aberdeen Proving Grounds, Aberdeen, Md. to March Field, Riverside, Calif. (May 7)

Hill, 1st Lt. Bruce C., relieved from Air Corps, assigned to Second Engineers, Fort Sam Houston, Tex. (Apr. 26)

Hoag, 1st Lt. Earl S., from office Chief of Air Corps, Washington, D. C., to March Field, Riverside, Calif. (May 7)

Holmes, 2d Lt. Thomas J., from Mitchel Field, N. Y., to Brooks Field. (May 7)

Hornsby, 1st Lt. Aubrey, from Maxwell Field, Montgomery, Ala., to March Field. (May 7)

Irvine, 2d Lt. Clarence S., from Selfridge Field, Mt. Clemens, Mich., to Kelly Field. (May 7)

Jewett, 1st Lt. Alfred L., from Marshall Field, Fort Riley, Kans., to Kelly Field, Tex. (May 7)

Jones, Major Byron Q., relieved from assignment at Command and General Staff School, Fort Leavenworth, Kans., to report to commanding general, Seventh Corps Area. (May 23)

Kelly, Capt. James Leo, S. R., Buffalo, N. Y., report to Air Corps procurement planning representative, Buffalo, N. Y. for training. (May 11)

Kieburtz, 2d Lt. Rowland, from Brooks Field, Tex., to Kelly Field, Tex. (Apr. 25)

Kilner, Maj. Walter G., from office of Chief of Air Corps, to sail on or about October 7 for Manila, Philippine Islands, for duty with Air Corps. (May 20)

Kimble, 1st Lt. Frederick Von H., from Selfridge Field, Mt. Clemens, Mich., to March Field, Riverside, Calif. (May 7)

Knapp, 1st Lt. Robert D., from Maxwell Field, Montgomery, Ala., to Brooks Field, San Antonio, Tex. (May 7)

Kraus, Capt. Walter F., from office of Chief of Air Corps, to McCook Field, Dayton, Ohio, to consider airplane designs for National Guard use and to report on winners of sealed bids. (May 17)

Langmead, 1st Lt. Edmund C., from 12th Observation Sqdn., Fort Sam Houston, Tex., to Brooks Field, San Antonio, Tex. (May 7)

Lehman, 2d Lt. Arthur J., from Maxwell Field, Montgomery, Ala., to Brooks Field. (May 7)

Liggett, 1st Lt. Arthur G., from Selfridge Field, Mt. Clemens, Mich., to Kelly Field. (May 7)

Lohman, Maj. Eugen A., leave of absence 1 month 10 days. (May 10)

Lowe, 2d Lt. Thomas M., from Langley Field, Va., to Kelly Field, Tex. (May 7)

Lundel, 1st Lt. Foyd A., from Fort Crockett, Tex., to Kelly Field, Tex. (May 7)

MacDill, Maj. Leslie to McCook Field, Dayton, Ohio, to consider airplane designs for National Guard use and to report on winners of sealed bids. (May 17)

McCullough, 1st Lt. Arthur L., from Mitchel Field, L. I., N. Y., to March Field. (May 7)

McDuffie, 1st Lt. Jasper K., from Mitchel Field, L. I., N. Y. to Kelly Field, Tex. (May 7)

McGeehan, 2d Lt. Charles W., transferred to Coast Artillery Corps, from Fort Sam Houston, Tex., to Hawaiian Dept. (Apr. 29)

Miller, Maj. Ray S., A. C. R. to McCook Field, Dayton, Ohio, to consider airplane designs for National Guard use and to report on winners of sealed bids. (May 17)

Moore, 1st Lt. Harold A., to Crissy Field, Presidio of San Francisco, Calif., to Kelly Field. (May 7)

Murray, 2d Lt. George L., from Bolling Field, D. C., to March Field, Riverside, Calif. (May 7)

Nelson, 2d Lt. Donald H., from detail in Air Corps and from duty with Second Division and from station at Fort Sam Houston, Tex., to 14th Calvary at Fort Sheridan, Ill. (May 23)

Noyes, 2d Lt. Edgar T., from Fort Crockett, Texas, to March Field. (May 7)

Ogden, 2d Lt. Harvey R., from 12th Observation Sqdn., Fort Sam Houston, Tex., to Brooks Field, San Antonio, Tex. (May 7)

Old, 2d Lt. William D., from Maxwell Field, Montgomery, Ala. to Kelly Field, Tex. (May 7)

Phillips, Capt. Charles T., office of Chief of Militia Bureau, to McCook Field, Dayton, Ohio, to consider airplane designs for National Guard use and to report on winners of sealed bids. (May 17)

Phillips, 1st Lt. Donald B., from McCook Field, Dayton, Ohio, to Washington, D. C. (Apr. 25)

Randell, 2d Lt. Russell E., from Marshall Field, Fort Riley, Kans., to Brooks Field. (May 7)

Robinson, 1st Lt. Charles McK., from Fort Crockett, Tex., to March Field. (May 7)

Rodieck, 2d Lt. Leonard H., from Selfridge Field, Mt. Clemens, Mich., to Kelly Field. (May 7)

Rogers, 2d Lt. Elmer J., Jr., from Langley Field, Va., to Brooks Field, San Antonio. (May 7)

Rogers, 1st Lt. Oscar L., from Maxwell Field, Montgomery, Ala., to Brooks Field. (May 7)

Rundquist, 2d Lt. Elmer T., from Langley Field, Va., to Kelly Field, Tex. (May 7)

Scott, 2d Lieut. Russell, from Mitchel Field, N. Y., to Fort Bragg, N. C. (Apr. 25)

Smith, Maj. Maurice Robert, from Kansas City, Mo., to Scott Field, Ill. (Apr. 26)

Sprague, 2d Lt. John T., from Langley Field, Va., to Brooks Field, San Antonio. (May 7)

Spry, 2d Lt. James W., from Third Attack Group, Fort Crockett, Tex., to Brooks Field. (May 7)

Stearley, 1st Lt. Ralph F., from Fort Crockett, Tex., to Kelly Field, Tex. (May 7)

Stitt, 1st Lt. Donald G., from Post Field, Fort Sill, Okla., to Kelly Field, Tex. (May 7)

Stroh, 2d Lt. Claire, from Maxwell Field, Montgomery, Ala., to Brooks Field. (May 7)

Talbot, 1st Lt. Clarence P., 88th Observation Sqdn., Wright Field, to Kelly Field. (May 7)

Thomas, 1st Lt. Arthur, 12th Observation Sqdn., Fort Sam Houston, to Kelly Field. (May 7)

Timberlake, 2d Lt. Patrick W., F. A., from Langley Field, Va., to March Field. (May 7)

Trunk, Capt. Otto G., from Bolling Field, D. C., to San Antonio, Tex. (Apr. 25)

Vanatta, 2d Lt. Herbert Vernon, A. C. R., Buffalo, Wyo., to Selfridge Field, Mich. (May 4)

Vandenburg, 2d Lt. Hoyt S., from Fort Crockett, Tex., to March Field, Riverside, Calif. (May 7)

Waler, 1st Lt. Alfred E., from Middletown air intermediate depot, Middletown, Pa., to Brooks Field, San Antonio, Tex. (May 7)

Waller, 1st Lt. Alfred E., from Middletown air intermediate depot, Middletown, Pa. to Brooks Field, San Antonio, Tex. (May 7)

Weyland, 2d Lt. Otto P., from Fort Sam Houston, Tex., to Kelly Field, Tex. (May 7)

White, 2d Lt. Walter C., from Mitchel Field, N. Y., to March Field, Riverside, Calif. (May 7)

Williams, 1st Lt. Paul L., from Langley Field, Va., to March Field, Riverside, Calif. (May 7)

Woodbridge, 2d Lt. John P., transferred to Field Artillery; report to commanding general, Fort Sam Houston, Tex. (Apr. 25)

Woodward, 1st Lt. Henry G., leave of absence 2 months. (May 21)

York, 1st Lt. John Y., leave of absence 8 days. (May 5)

NAVY AIR SERVICE ORDERS

THE following Navy air orders have been issued as of the dates indicated in brackets:

Alexander, Rad. El. Claude G., detached VJ Sqdn. 1, Aircraft Sqdns., Battle Flt., to Nav. Air Sta., Pearl Harbor, T. H. (Apr. 18)

Bartlett, Lt. Comdr. Harold T., detached *U.S.S. Langley*, to *U.S.S. Arkansas.* (Apr. 15)

Bogusch, Lt. Comdr. Harry R., detached Nav. Air Sta., Pensacola, Fla., to Navy Air Sta., San Diego, Calif. (May 7)

Botta, Lt. Rico, orders March 23, 1927, to Inspr. of Nav. Aircraft, Buffalo, N. Y., revoked, to continue duty *U.S.S. Langley.* (Apr. 19)

Butler, Lt. Ola D., detached *U.S.S. Langley,* to *U.S.S. Farenholt.* (May 24)

Caldwell, Ens. Rex S., detached *U.S.S. Corry,* to temporary duty Nav. Air Sta., Pensacola, Fla. (May 16)

Carrington, Ens. James H., detached *U.S.S. Macdonough,* to temporary duty Nav. Air Sta., Pensacola, Fla. (May 16)

Carson, Ens. Joseph M., detached *U.S.S. Argonne,* to temporary duty Nav. Air Sta., Pensacola, Fla. (May 16)

Carter, Lt. (j.g.) Beverly E., detached Nav. Air Sta., Pensacola, Fla., to *U.S.S. Vega.* (Apr. 15)

Charlson, Ens. John A., detached *U.S.S. Pennsylvania,* to temporary duty Nav. Air Sta., Pensacola, Fla. (May 16)

Chourre, Lt. Emile, detached Mass. Inst. of Tech., Cambridge, Mass., to VT Sqdn. 2, Aircraft Sqdns., Battle Flt. (Apr. 27)

Cooper, Lt. (j.g.) Henry M., detached *U.S.S. Langley,* to temporary duty Nav. Air Sta., Pensacola, Fla. (May 14)

Criger, Lt. (j.g.) Earl M., (Ch. C.) detached *U.S.S. Memphis,* to Nav. Air Sta., Lakehurst, N. J. (May 10)

Cuddihy, Lt. George T., detached Nav. Air Sta., Anacostia, D. C., to VF Sqdn. 5, Aircraft Sqdns., Sctg. Flt. Orders March 30, 1927, revoked. (Apr. 29)

Cunningham, Lt. Winfield S., detached VO Sqdn. 2, *U.S.S. Oklahoma,* Aircraft Sqdns., Battle Flt., to *U.S.S. Langley.* (Apr. 15)

Dana, Lt. (j.g.) Winfred P., (M.C.) detached VS Sqdn. 1, Aircraft Sqdns., Sctg. Flt., to VT Sqdn. 1, Sctg. Flt. (May 10)

Daniel, Rad. El. William R., detached VS Sqdn. 1, Aircraft Sqdns. Sctg. Flt., to c.f.o. *U.S.S. Lexington.* (Apr. 29)

Davis, Ens. Richard, Jr., detached *U.S.S. Henshaw,* to temporary duty, Air Sta., Pensacola, Fla. (May 16)

Derx, Lt. Martin R., detached Navy Yard, Philadelphia, Pa., to *U.S.S. Kanawha,* 1927, to Hydrographic Office, Washington, D. C., revoked, to continue duty VO Sqdn. 2, *U.S.S. California,* Aircraft Sqdns., Battle Flt. (Apr. 19)

Drinan, Lt. (j.g.) Raymond B., (Ch. C.), detached Nav. Air Sta., San Diego, Calif. to Asiatic Sta. (Apr. 18)

Fairlamb, Lt. George R., detached VT Sqdn., 1, Aircraft Sqdns., Sctg. Flt., to Inspr. of Nav. Aircraft, Buffalo, N. Y. (Apr. 20)

Finch, Lt. Volney C., detached Mass. Inst. of Tech., Cambridge, Mass., to VT Sqdns., 2, Aircraft Sqdns., Battle Flt. (Apr. 27)

Gaines, Ens. Richard K., detached *U.S.S. Williamson,* to temporary duty Nav. Air Sta., Pensacola, Fla. (May 16)

(*Continued on page* 602)

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Vought UO-1 on display at the All-American Aircraft Exhibit.

VOUGHT CORSAIR MAKES RECORD

THE world's speed record for seaplanes for a distance of 1000 kilometers has also been annexed by the Vought "Corsair" standard Naval observation plane.

This record was established on May 21st, by Lieutenant Rutledge Irvine, U. S. N., over the short closed course at Hampton Roads, Va. In covering the 1000 kilometers, one hundred and nineteen turns had to be negotiated owing to the shortness of the circuit, which was only 25 kilometers.

Lieutenant Irvine averaged 130.93 miles per hour for the total distance, according to the National Aeronautic Association. This beats the former world's record by over 27 miles per hour, in spite of the fact that the "Cosair's" engine was permitted to turn only 1790 revolutions per minute.

Lieutenant Irvine flew the course in 4 hours and 44 minutes, using a U. S. Navy stock model Vought "Corsair" observation plane. This plane was designed around the new Pratt & Whitney "Wasp", 400 h. p. radial air-cooled motor.

This is the fourth world's record to be established by the Navy in the "Corsair".

In the same plane, on April 14th, Lieut. George R. Henderson, U. S. N., made a World's altitude record of 22,178 feet for seaplanes with 500 kilograms ballast load. On April 23rd, Lieut. S. W. Callaway, U. S. N., made a world's speed record for seaplanes of 147.263 miles per hour for 100 kilometers in the same class, and on April 30th, Lieut. James D. Barner, U. S. N., established a world's seaplane speed record of 136.023 miles per hour for 500 kilometers, carrying 1102 pounds of ballast in addition to service useful load.

The establishment of this fourth record by the new Vought "Corsair" brings the number of world's records held by the United States to sixteen out of the fifty-nine records internationally recognized. The Vought "Corsair", as a standard service seaplane, has the distinction of having made a world's record per week since it was assigned to record breaking, and it is expected that several more world's records are easily within the capabilities of this phenominal service plane. Of the six world's records recently returned to the United States, four have been consecutively made by this latest Vought model which is to replace the UOs in the Naval Air Service.

NAVY TO DISTRIBUTE SURPLUS MATERIAL

ON February 14, 1927, Congress passed a law authorizing the Secretary of the Navy to dispose of obsolete aeronautical material, consisting of aircraft, aircraft parts, instruments and engines, to accredited schools, colleges and universities for use in their aeronautical courses, providing that none of the material would be used in actual flight.

The Navy has a quantity of surplus material on hand, including engines, engine parts, complete airplanes (obsolete) and instruments. This material will be distributed to schools having an accredited aeronautical course. There are no charges entailed except for transportation and delivery from Philadelphia, Pa., where most of this equipment is stored.

NAVY ORDERS 250 MICARTA PROPELLERS

A CONTRACT for 250 "micarta" propeller blades, made from canvas compressed into a noncorrosive product of metallic strength, has been awarded by the Department of the Navy to the Westinghouse Electric & Manufacturing Company.

Micarta is a new material, and is used in the manufacture of pulleys and fair-leads required in the construction of airplanes, as well as for the manufacture of propellers. It is water resisting and moisture proof.

NAVY AIR SERVICE ORDERS

(*Continued from page 600*)

Groesbeck, Lt. Comdr. Bertram, Jr., (M.C.), detached Nav. Air Sta., Coco Solo, C. Z., to Rec. Bks., Hampton Rds., Va. (Apr. 20)

Grooch, Lt. William S., detached VO Sqdn. 2, *U.S.S. Oklahoma,* Aircraft Sqdns., Battle Flt., to *U.S.S. Mississippi.* (Apr. 15)

Halpine, Lt. Charles C., detached Mass. Inst. of Tech., Cambridge, Mass., to command VJ Sqdn. 2, Aircraft Sqdns., Sctg. Flt. (Apr. 29)

Hanneken, 1st Lt. H. H., Marine Corps, detached M. B., N. A. S., Lakehurst, N. J. to M. B., Navy Yard, Philadelphia, Pa. (Apr. 23)

Highley, Lt. John W., detached Naval Academy, to *U.S.S. Langley.* (May 24)

Hirst, Ens. George C., Jr., detached *U.S.S. Idaho,* to temporary duty Nav. Air Sta., Pensacola, Fla. (May 16)

Hoffner, Ens. Carleton C., detached *U.S.S. Charles Ausburn,* to temporary duty Navy Air Sta., Pensacola, Fla. (May 16)

Hollingsworth, Lt. Wallace B., detached Nav. Air Sta., Coco Solo, C. Z., to VS Sqdn. 1, Aircraft Sqdns., Battle Flt. (Apr. 20)

Hughes, Lt. (j.g.) Francis M., detached *U.S.S. Pennsylvania* to temporary duty Nav. Air Sta., Pensacola, Fla. (May 14)

Hundt, Lt. Lester T., detached Bu. Aero., to Obs. Plane Sqdn. 6, Aircraft Sqdns., Sctg. Flt. (May 7)

Jennings, Lt. (j.g.) Howard L., detached *U.S.S. New Mexico,* to VF Sqdn. 2, Aircraft Sqdns., Battle Flt. (Apr. 15)

Johnson, Lt. (j.g.) Francis B., orders March 26, 1927, to Nav. Air Sta., Pearl Harbor, T. H., revoked, to continue duty with VT Sqdn. 2, Aircraft Sqdns., Battle Flt. (May 24)

Kivette, Ens. Frederick, detached *U.S.S. Idaho,* to temporary duty Nav. Air Sta., Pensacola, Fla. (May 12)

Loftus, Lt. Stephen A., detached *U.S.S. Vestal,* to resident asst. inspr. of Engineering Natl's, Wright Aeronautical Corp., Pateron. (Apr. 28)

Manchester, Capt. John D., (M.C.), detached Bu. M. and S., to Nav. Air Sta., San Diego, Calif. (May 10)

Masek, Lt. Comdr. William, detached command VS Sqdn. 1, Aircraft Sqdns. Sctg. Flt., to Nav. Air Sta., San Diego, Calif. (May 18)

Narum, 2d Lt. L. F., Marine Corps, on June 4 detached NAS. Pensacola, Fla., to MB, Nyd, Puget Sound, Wash. (May 20)

Nester, Lt. (j.g.) John L., detached *U.S.S. Sands,* to temporary duty Nav. Air Sta., Pensacola, Fla. (May 16)

Parker, Lt. (j.g.) Harold E., detached Nav. Air Sta., Pensacola, Fla., to *U.S.S. Kidder.* (Apr. 15)

Renty, Comdr. George S., (Ch. C.) detached *U.S.S. Wright,* to Nav. Air Sta., Pensacola, Fla. (May 10)

Richardson, Capt. Holden C., (C.C.) detached Bu. Aero., to Manager Naval Aircraft Factory, Navy Yard, Philadelphia, Pa. (Apr. 28)

Ruble, Lt. (j.g.) Richard W., detached *U.S.S. Pennsylvania,* to Nav. Air Sta., Pensacola, Fla. (May 16)

Stanley, Lt. John, detached Nav. Air Sta., Nav. Oper. Base, Hampton Roads, Va., to *U.S.S. New York.* (May 7)

Studley, Lt. Barrett, authorized report to *U.S.S. Mississippi.* (Apr. 29)

Townsend, Lt. Guy D., detached Nav. Aircraft Factory, Navy Yard, Philadelphia, Pa., to VT Sqdn. 1, Aircraft Sqdns., Sctg. Flt. (May 10)

Watson, Lt. (j.g.) George F., detached *U.S.S. Bainbridge,* to Nav. Air Sta., Lakehurst, N. J. (Apr. 22)

Webb, Lt. Leland D., detached Mass. Inst. of Tech., Cambridge, Mass., to VF Sqdn. 5, Aircraft Sqdns., Sctg. Flt. (Apr. 27)

Welker, Lt. (j.g.) George W., detached Nav. Air Sta., Pensacola, Fla., to *U.S.S. Idaho.* (Apr. 22)

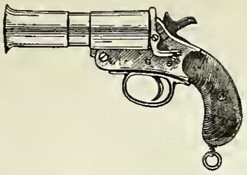
Westervelt, Capt. George C., (C.C.) relieved all active duty, to home. (Apr. 28)

Young, Lt. (j.g.) Clifton A., (M.C.), detached VT Sqdn. 1, Aircraft Sqdns., Sctg. Flt., to VS Sqdn. 1, Aircraft Sqdns., Sctg. Flt. (May 10)

P. & A. Photo.

Army chiefs at San Antonio for the Annual Air Force Maneuvers.
Left to right: Dwight F. Davis, Secretary of War; Maj. Gen. M. M. Patrick, Chief of Air Corps; Maj. Gen. Ernest Hinds, Commanding 8th Corps Area; and F. Trubee Davison, Assistant Secretary of War for Aviation.

VERY SIGNAL PISTOLS



for signalling or illumination purposes and to meet Government Regulations about to come into force.

The pistols are easy to handle and fitted with safety breech lock making them absolutely fool-proof. Fires cartridges loaded with stars which burn for a considerable time and are visible at distances from ten to fifteen miles. The candle power of the star varies from about 7,000 for the small stars up to 15,000 for the larger stars.

PISTOLS

	Price each
1 in. gauge, solid bronze barrel	$15.00
1½ in. gauge, steel barrel	17.50
1½ in. gauge, 10 in. barrel and shoulder butt	20.00

CARTRIDGES

	Per 25
1 in., red or green or white star	$5.00
1½ in., yellow or red or green star	7.50
1½ in., with change color star; red to white or green to red	8.00
1½ in., long; with parachute; change color star; white to green or white to red	16.25

(All the above are for night use.)

The undernoted are for day use:

1½ in. cartridges, long; with parachute; red smoke star,	$16.25

All prices are f.o.b. New York

We also have complete supplies of general aviation pyrotechnics.

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THE AERONAUTICAL INDUSTRY

DANIEL GUGGENHEIM "SAFETY" COMPETITION

THE Daniel Guggenheim Fund for the Promotion of Aeronautics gave a dinner at the Yale Club, New York City, on April 29th, on the occasion of the announcement of its Safe-Aircraft Competition. The three assistant secretaries for aeronautics were the guests of honor and speakers. Harry F. Guggenheim made an admirable toastmaster.

The Fund is offering a first prize of $100,000 and five "Safety Prizes" of $10 000 each, which will be awarded in accordance with the Competition Rules for the achievement of a real advance in the safety of flying through improvement in the aerodynamic characteristics of heavier-than-air craft.

Applications for entry in the competition will be received at 598 Madison Avenue, New York, N. Y., on and after September 1, 1927, and will be closed either on October 31, 1929, or at any time prior to that date when the Fund may consider that the object of the Competition has been achieved. Tests will be carried on and judged from time to time throughout the period. The judges will be: Mr. Orville Wright, chairman; Mr. F. Trubee Davison, Assistant Secretary of War for Aeronautics; Mr. Edward P. Warner, Assistant Secretary of the Navy for Aeronautics; Mr. William P. MacCracken, Jr., Assistant Secretary of Commerce for Aeronautics; Commander R. E. Byrd, and Dr. George W. Lewis. The technical advisers are: Professor Alexander Klemin, Lieutenant E. E. Aldrin, and Major R. H. Mayo.

The Fund contemplates that the competition will bring forth new inventions and ideas which will mark a notable advance in the whole field of aeronautics. (Full rules and regulations governing the competition will be published in the July issue of AERO DIGEST.)

BYRD'S PLANE, THE "AMERICA", READY

THE "America", Commander Richard E. Byrd's three-motored Fokker monoplane, which was designed to fly to Paris, was christened with elaborate ceremony on May 21st at Roosevelt Field, L. I.

The plane is all ready for its final load test, 14,600 pounds, but it is likely that the flight to Paris will be postponed until after Captain Lindbergh's return to the United States.

With Bert Acosta as pilot, Lieutenant George O. Noville, co-pilot and radio man, Commander Byrd's flight across the Atlantic, sponsored by Rodman Wanamaker, will be made in an effort to advance the cause of aeronautical science and to demonstrate the feasibility of regular transatlantic air traffic.

The entire expedition has been carefully and scientifically planned, utilizing the most advanced instruments and radio equipment.

THE ER EXPRESS

A DAILY passenger and express air line was inaugurated on May 18, between Louisville, Ky., and Cleveland, Ohio, to be operated by The Embry Riddle Co. of Cincinnati. Intermediate stops are made at Cincinnati, Dayton, Columbus and Akron. Waco planes are used exclusively.

Prominent personages, including Assistant Secretary of Commerce William P. McCracken, Postmaster General Harry S. New, Mayor Murray Seasongood, and City Manager C. O. Sherrill of Cincinnati and Dean Herman W. Schnieder of The University of Cincinnati attended the christening ceremony. Miss Amy Pace of the Cincinnati Chamber of Commerce christened the new Waco Ten "Miss Cincinnati". Pending delivery of more Waco Ten planes, the service will be supplemented by Waco Nines.

Departing from Bowman Field, Louisville, at 5:40 a. m. they are scheduled to arrive at Municipal Airport, Cleveland, at 11:20 a. m.; leave Cleveland at 2:00 p. m. and arrive at Louisville at 7:40 p. m. The fare from Louisville to Cleveland is $90 one way, $170 round trip; intermediate stops, in proportion to distance. Rates for carrying express matter have also been worked out.

The air route is to be called "The ER Express" the "ER" being pronounced as "air", so named after the initials of T. Higbee Embry, president of the Embry Riddle Co., and the initials of the company itself.

During the past year the pilots of the Embry Riddle Co. flew over 50,000 miles.

DANIEL GUGGENHEIM FINANCES NUNGESSER COLI SEARCH

AGAIN giving evidence of his earnest interest in furthering the cause of aviation, Daniel Guggenheim, patron of aeronautics, has contributed $25,000 to the Nungesser-Coli Search Expedition Fund, the sum representing the entire amount required for the quest.

In giving his reasons for this action, Mr. Guggenheim expressed the belief that America owes it no less to itself than to France, and to the cause of aeronautics, to prosecute a search to the very last limit of human ability in an endeavor to locate the missing French aviators.

Mr. Guggenheim said: "Obviously this search is America's job. France is at least twice as far as we are from the point at which these splendid Frenchmen are reported last to have been sighted. Plainly every moment counts, and from now on must be conserved.

"Every possibility, no matter how remote, must be fully investigated. No step must be left untaken, no matter how diffi-

The "America," Commander Richard E. Byrd's tri-motored Fokker monoplane designed to fly to Paris.

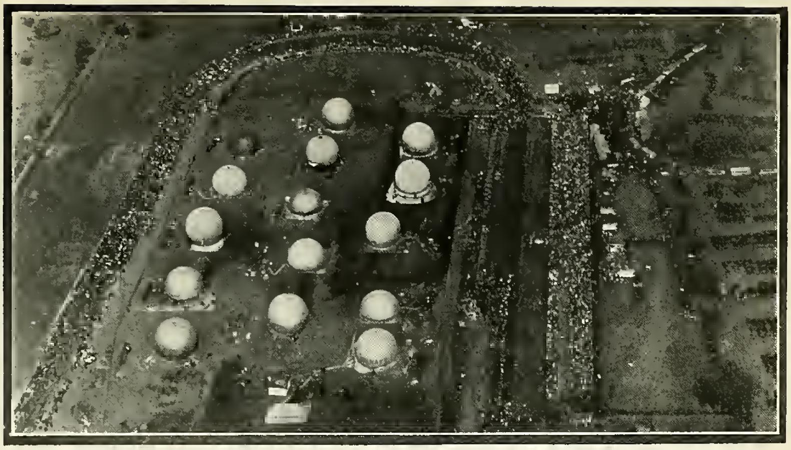
cult, which might lead to the finding and, if possible, to the relief of these gallant venturers of a gallant nation in a magnificent endeavor.

"The fact that these heroic men were reported on May 9 at Harbor Grace by different witnesses is a lead which warrants a complete combing of Newfoundland. If any trace of these men can be found, the episode will be one concerning which the whole world will rejoice with us and with France.

"If we work with the same faith that took our Lindbergh across the ocean to that France from which these fine men started toward our coasts, we may yet bring his gallant brother aviators safely to their goal, the radiance of their future undimmed.

"The heart of America has been deeply touched by the magnificent reception which has been given to young Lindbergh by the French Government and people, a reception fully justified by his achievement, but one which would not have been a possibility had there not been behind it a deep sentiment of friendship for this nation as well as a profound determination to encourage the development of peace-time aviation."

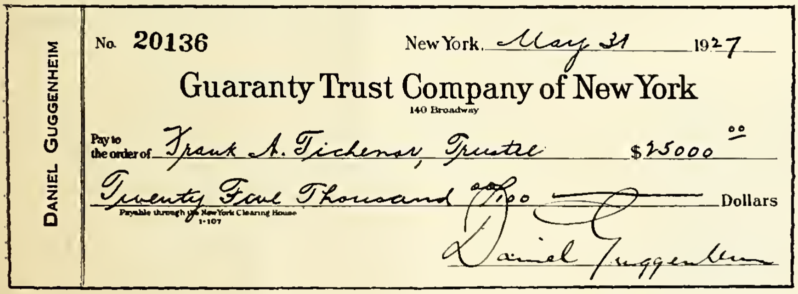
Mr. Guggenheim was prompted to make his generous offer by the statement of F. Sydney Cotton, who organized the search, that in case the expedition is successful, all rewards that have been, or may be, offered, will be turned over to the president of France to administer as he may see fit. Mr. Cotton is thoroughly acquainted with the Newfoundland territory, having carried air mail over that section for the past four years.



Start of the National Balloon Race from the Speedway at Akron, Ohio.

The searching party will be made up of volunteers who will serve without pay. The assistant pilot will be Cy Caldwell, an expert of wide experience well known to readers of AERO DIGEST; the engineer remains to be selected by Mr. Cotton.

The contribution of $25,000 by Mr. Guggenheim for the expenses of the expedition is entirely apart from the large sums he has donated to the Daniel Guggenheim Fund for the Promotion of Aeronautics.



DANIEL GUGGENHEIM

No. 20136 New York, May 31 1927

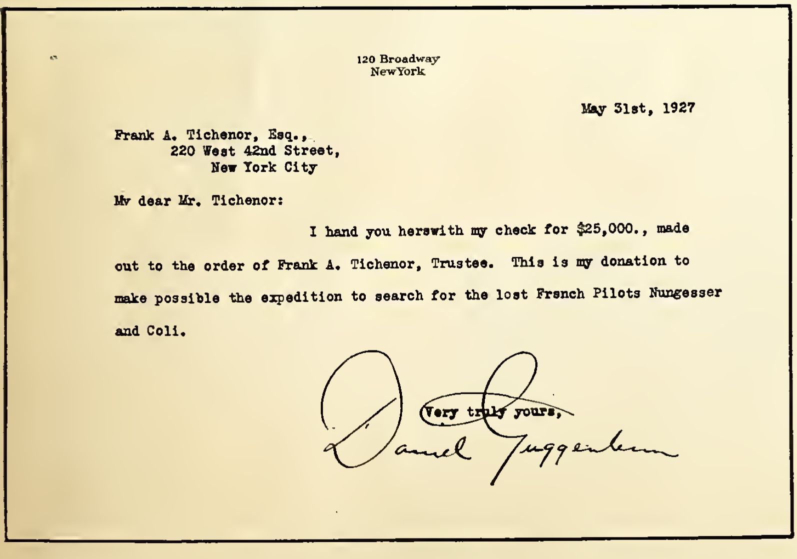
Guaranty Trust Company of New York
140 Broadway

Pay to the order of Frank A. Tichenor, Trustee $25000 00

Twenty Five Thousand 00/100 Dollars

Payable through the New York Clearing House 1-107

Daniel Guggenheim



120 Broadway
New York

May 31st, 1927

Frank A. Tichenor, Esq.,
220 West 42nd Street,
New York City

My dear Mr. Tichenor:

I hand you herewith my check for $25,000., made out to the order of Frank A. Tichenor, Trustee. This is my donation to make possible the expedition to search for the lost French Pilots Nungesser and Coli.

Very truly yours,

Daniel Guggenheim

VAN ORMAN WINS RACE

AS we go to press the report is wired us of the landing of the Detroit Flying Club's entry number 3 in the National Elimination Balloon Race at Showhegan, Me.

Unless contests upset the unofficial landing reports the three pilots in the International event to start from Denver in September will be Ward T. Van Orman, pilot of the Goodyear entry in the elimination race; E. J. Hill, piloting the Detroit Number 3, and Captain William E. Kepner of Scott Field, pilot of the United States Army entry No. 3.

The unofficial landing records give Van Orman, 727 miles; Captain Kepner, 602 miles; and Hill, 665 miles. Because of the closeness of the latter two, a decision probably will have to be rendered by the contest committee of the National Aeronautic Association.

If Van Orman is officially declared winner of the race Akron will retain permanent possession of the Litchfield trophy, Van Orman having captured it three successive years as a representative of this city.

Positions of all balloons in the order which they weighed off follow:

Entry	*Landed*	*Miles cov'd*
U. S. Army No. 2	Malone, N. Y.	400
U. S. Navy No. 3	Mottville, N. Y.	325
St. Louis Rotary Club	Brockville, Ont.	425
Detroit Flying Club No. 1	Parksville Stn.	340
Goodyear Tire	Hancock, Me.	727
Detroit No. 2	Laconia, N. H.	550
U. S. Navy No. 2	Keatings Summit, Pa.	175
U. S. Army No. 1	Cranberry Lake, N. Y.	400
Detroit No. 3	Showhegan, Me.	665
U. S. Army No. 3	Biddeford, Me.	602
U. S. Army No. 4	Martinsburg, N. Y.	400
Scripps-Howard	Eastman, Quebec	565
Davey Tree Expert	Starucca, Pa.	325
U. S. Navy No. 1	Pope Mills, N. Y.	400
Beacon Journal	Harpersville, N. Y.	350

LEGION AIR MEET

THE American Legion's annual air meet will be held at Curtiss Field, Garden City, L. I., N. Y., on June 12th.

Among the pilots to take part in the contests are Richard H. Depew, C. W. Chandler and Dick Peers of the Fairchild Aviation Company; Casey Jones and M. M. Merrill of the Curtiss Flying Service; George Weiss of the Travel Air Company; Edward Caperton, Lewis Meyer, P. S. Schultz and Eugene Brundage.

Aero Digest booth at the All-American Aircraft Show.

Fokker Universal which delivered magazines to Show.

SPEEDY DELIVERY OF MAY AERO DIGEST

On Sunday, May 1st, most of the Aero Digest editorial staff entrained for the All-America Air Show at Bolling Field, Washington, D. C., with as many of the first copies of the May issue as they could carry. On Monday, May 2nd, it was apparent that they had not taken nearly enough to fill the immediate demand and no more were expected until later in the week.

R. B. C. Noorduyn of the Atlantic Aircraft Co., hearing of the dilemma, immediately offered to carry as many as we wanted in the Fokker Universal which was leaving first thing the next morning. The rest was easy—a taxi piled high with magazines delivered them to the field and in less than two hours they arrived at Bolling Field just as the last of the original consignment was disappearing.

Frank Samuels out on the West Coast has been delivering copies of Aero Digest by air for the last year and has used almost every type of machine they have out there. The next step is to "Lindbergh" them out on non-stop flights to the far places in the West, South, and North as soon as they come off the presses.

INTER-AMERICAN COM. APPROVES AIR RULES

The Inter-American Commission of Commercial Aviation has approved the draft convention for regulation of commercial aviation within those countries which are members of the Pan-American Union.

The convention, which covers the registration of aviation companies, licensing of pilots, transportation of munitions by air, and other matters will be submitted for adoption to the governing board of the Pan American Union and later to the Sixth Pan American Conference to be held in Havana in 1928.

MEMPHIS AIR NEWS

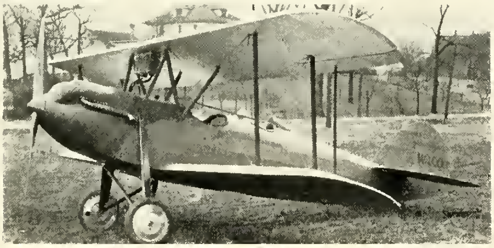
By E. B. Ayres

Memphis has three airplane dealers now: Memphis Airport, the agency for Wacos; Bry-Block, agency for Eaglerocks; Dadtin, agent for Tennessee and Kentucky and also sells Eaglerocks.

The New Brys Airport, located on the Raleigh Road one mile north of the city limits, has four new Alexander Eaglerocks. The company has leveled off the field and are figuring on buying fifteen new steel hangars.

On May 7, 1927, a squadron of eleven planes passed through on their way to the maneuvers at San Antonio, Texas. Lieut. Omile of the Memphis Airport has five new Wacos to deliver in the next six weeks.

The Waco was the first airplane to fly over the flood area, both north and south, and was the only commercial seaplane working in this district. It also was the first and only ship to fly over the tornado area.



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1 USED J-N-4, GOOD CONDITION, $600
WACO 9, SLIGHTLY USED, $1800.

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AVIATORS HANDBOOK

The necessary information and instruction which pilots and mechanics must have, condensed—yet covers meteorology, navigation and all subjects used in commercial pilot and mechanic examinations.

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WACO GIVES YOU MORE PERFORMANCE BEAUTY — SAFETY — VALUE

IN a class by itself — The Waco Ten outperforms any Commercial Airplane ever built with equal horsepower, in every department of flying.

Frankly the results will amaze you. You will experience a new conception of flying luxury—unsurpassed speed ability—plus a balanced buoyancy of motion beyond comparison or precedent.

Revolutionary principles of shock absorbing have been accomplished and incorporated in the WACO Ten split landing gear which absolutely eliminates all bounding while landing.

The WACO Ten was designed to conform in every respect to the latest U. S. Air Regulation requirements—it is built to stand up under a power range of from 90 to 150 horse-power.

The WACO Distributor Organization is anxious to give you a demonstration. Ask us for the name of the one nearest you.

WACO
AIRPLANES
MANUFACTURED BY ADVANCE AIRCRAFT CO., TROY, OHIO

NATIONAL AIR TOUR

WHEN, on June 27, the big clock at the Ford Airport strikes the hour of 10 the first ship entered in the National Air Tour of 1927 will take off on a 4,000 mile flight in competition for the Edsel B. Ford Reliability Trophy and $12,000 in cash prizes. At intervals of one minute thereafter the remaining planes in the tour will head into the wind and start on the same journey. The real effort will not be made, however, to capture the trophy or the money but to demonstrate to the American people that commercial aircraft is safe, dependable and reliable and that a new method of transportation has been developed that is swifter and more flexible than any preceding method and in which confidence may safely be placed.

The National Air Tour, which was started in 1925 more or less as a publicity stunt for Detroit, has become not only a national institution but is recognized in aircraft circles as the outstanding aviation event of the year. To the aircraft industry it has become what the automobile tours of a generation ago were to the automotive industry and through it thousands of converts are made annually to air transportation.

When the starting time came for the first tour 14 planes, representing almost as many manufacturers, faced the starters flag which was in the hands of Edsel B. Ford, the donor of the trophy. Of these 13 successfully negotiated the 1,900 miles of the contest and arrived at the starting point on the appointed day. In 1926 a total of 25 planes faced Captain Edward V. Rickenbacker for the 2,600 miles scheduled and of these 19 successfully completed the contest. The others were forced out because of mechanical troubles and, although this was a most bitterly fought contest, not the slightest accident occurred. The third tour is scheduled to cover a route approximately 4,000 miles long and which will include a varied territory extending from Detroit to the eastern seaboard and back across the Allegheny Mountains to the middle west and thence south to Texas and back by way of Omaha and Chicago.

Since the entries do not close until June 17 it is obviously impossible to estimate the number of pilots that will face Starter Charles F. Kettering this year at Detroit or will be sent away at each of the other controls by traveling starter Frank A. Tichenor, but conservative estimates place the number at not less than 30 and some feel that at least two score will compete.

The Edsel B. Ford Trophy.

It is intended that the itinerary will include Cleveland as the night stop for the first day and that the following schedule will be followed: June 27, Cleveland; June 28, Buffalo; June 29, Geneva and Schenectady; June 30, Boston; July 1, New York City; July 2, Philadelphia or Atlantic City; July 3, Pittsburgh; July 4, Dayton; July 5, Cincinnati and Indianapolis; July 6, Memphis; July 7, Pine Bluff and Dallas; July 8, Oklahoma City and Tulsa; July 9, Wichita and Omaha; July 10, Moline and Chicago; July 11, Grand Rapids and Detroit.

DETROIT AIR NEWS

By Frank Bogart

DETROIT had ten exhibitors at the first annual National Aircraft Show in Washington, May 1 to 5, out of a total of 86. This was more than entered from any other city or metropolitan area, except New York.

Detroit plane builders and makers of accessories reported a stimulation in their business resulting from the exhibit, for which all had the greatest of praise as to its scope and management. But they are united in belief that the scene of the next show should be elsewhere than Washington and they are solidly behind a plan to bring it to Detroit if possible. The Detroit Board of Commerce will extend the invitation to national and federal authorities shortly.

The most notable sale of a Detroit airplane during May was that of a Ford-Stout air liner to Standard Oil of Indiana. Colonel Robert W. Stewart, chairman of the board, and Allan Jackson, vice president, both of Chicago and both heavily interested in air transport, came from Chicago with a party of Standard Oil directors to take the maiden flight in the machine, christened the "Stanolind", May 21. It will be used between the large cities and the oil fields to expedite business trips by executives and will also play a part in developing commercial aviation in the ten states of the company's territory. It is distinct from any other Ford monoplane built thus far in that there are three sleeping berths in the cabin, which seats eight.

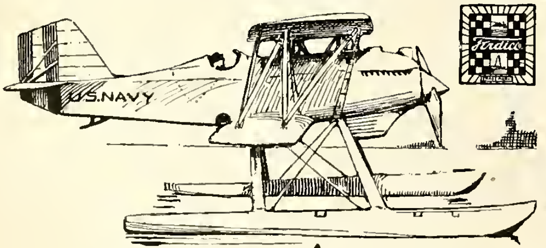
While on the subject of Ford, the demonstrations of radio telephoning and directional use of radio made by the Ford machine at the Washington show were probably the greatest single features of the week. All the Ford air lines are using radio beacon systems now. The planes are to be equipped with telephones and the range, now only 75 miles, in which persons in airplanes and on the ground may talk, will soon greatly increase, it is felt.

Roy W. Lockwood, chief inspector of the air regulations division in the Department of Commerce, has come to Detroit and Michigan with Frank Jerdone assisting him to conduct the necessary examination and licensing of pilots, aircraft, and factories before federal control goes into effect July 1.

The introduction of a five passenger cabin machine by the Buhl Aviation Company, shown as a surprise at the Washington show, was the outstanding new model of the month.

B. F. Billings, general manager of the Boston Airport Corporation, has bought a Stinson-Detroiter.

The National Guard—Michigan is the sixteenth state to have an air unit in the guard—has its first four training planes, only rebuilt JN4's to be sure, but it has been promised more and newer machines.



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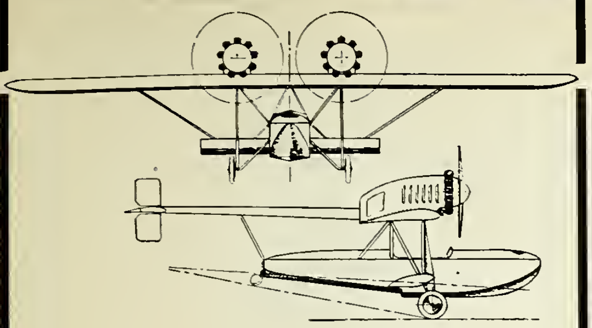

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BOSTON AIRPORT NEWS

By G. W. Hamblin, Jr.

THE Boston Airport Corp. features this month's news with the delivery by air of two Travel Airs and a Stinson-Detroiter. One of the ships was purchased by Bill Eaton, and the second by Armond Pothier, son of the Governor of Rhode Island. The Stinson will be used by the Airport Corporation for scheduled flights to Nantucket during the summer, and also for flights within a large radius of Boston, including trips to Hartford, Worcester and Portland, Maine, and as Billings puts it, "South Africa, if necessary."

I had a hop in the Stinson shortly after it was flown in from Detroit, and in my estimation it is the sweetest flying ship that I have ever flown in. Billings set the stabilizer and we flew for fifteen minutes without touching the controls.

Eleven new students have been enrolled in the flying school operated by the Airport Corporation, bringing the total enrollment well up to fifty. The new students are: Fred Pollard, jr., Henry Timkin, Edward S. Pitts, Orrin F. Lamb, Goodman N. Soloman, John F. Hally, Arthur F. Peraestch, Alfred E. Young, A. E. Osgood, Robertson Ayling, and Arthur T. Newell.

The Harvard Flying Club, with its usual acumen, has been carrying on, and judging by the number of hours the ship has had, everybody is having a good time.

The Stinson had barely arrived here when the newspapers hopped on it, and gave it quite a lot of publicity. A trip to New York was arranged within an hour after the ship landed. Then a trip to Nantucket was arranged. Besides the two passengers who flew down, Dick Sears, Pathé News cameraman, went along.

The mail has been increasing in volume all the time, reaching seventy pounds on several occasions.

The "gang" at the Port celebrated Charley Lindbergh's hop to Paris by holding a "Lindbergh Celebration". Judging from the reports, the party was "all wet" in one sense of the word.

BANKERS FLY TO HOT SPRINGS, ARKANSAS

THAT there is nothing like the commercial airplane as a mode of traveling and to save the time of big executives was demonstrated during the recent meeting of the American Bankers Association at Hot Springs, Ark., when Frank Blair, president of the Union Trust Company of Detroit and chairman of the National Air Tour for the Edsel B. Ford reliability trophy; Capt. Ray Collins, official referee of the event; Lt. Leonard Flo, also of Detroit and Dudley E. Waters, president of the Grand Rapids National Bank, made the 785-mile air trip in 7 hours establishing a new record for flying time between Hot Springs and Detroit.

The flying foursome are using the official "Wise Bird" club four-passenger Stinson-Detroiter plane.

Hot Springs now boasts of a permanent landing field, made possible through the coöperation of the Chamber of Commerce with Major Frank V. P. Ellsworth, of the Seventh Area Reserve officers Corps, and Major Asbury Meadows, commander of the Arkansas Air Squadron.

The commercial organization leased the field and took care of the expense involved in putting the field in order. It has a clear approach from all sides and is well drained, making it available for landing in wet weather.

AIR MAIL BIDS

ONLY one proposal was received for the service on the New Orleans-Pilottown air mail route. This was submitted by Arthur E. Cambas, of New Orleans, at the rate of $110 per round trip. Mr. Cambas is the present contractor on this route.

Two proposals were received for service on the Seattle-Victoria air mail route. The Northwest Air Service, Inc., Edward Hubbard, president, of Seattle, Wash., submitted a proposal of $190 per round trip. The other bid was submitted by Leo Huber, of Seattle at $195 per round trip.

ST. LOUIS AIR CIRCUS

By Thomas W. Parry, Jr.

SAFETY of flying and practicability of the United States Air Mail were clearly demonstrated at an air circus held at St. Louis Flying Field recently. The circus accomplished exactly what its promoters had intended it should. As a show it did not stand out as anything bordering on the unusual, but as a demonstration of the safety of flying it took front rank.

Many of the three thousand spectators who shivered through the chilly afternoon to witness the affair expected countless thrills to bring on bodily warmth through increased circulation. Their only thrills were earthly. Two mail trucks got stuck in the mud on the edge of the field, and a little boy tore his trousers on the fence near the hot dog stand.

With as many as nine ships often in the air at once, all the airplanes went through their paces without a hitch. The purpose of the show was to advertise the St. Louis to Chicago air mail, its safety and time-economy, and the advertising was efficacious. Pilots driving Jennies sat them down without even jolting the back struts. A yellow Curtiss Oriole took off with its engine firing badly and came down without the semblance of a crash.

Harold M. Bixby, president of the St. Louis Chamber of Commerce, Carl F. G. Meyer, former president, Postmaster Michener and John G. Lonsdale, president of the Clearing House Association, were on hand to praise the air mail. The first flight was made by Postmaster Michener, accompanied by William H. Conklin, postmaster of Springfield, Ill. Five ships, belonging to the national guard air service outfit in St. Louis, flew in formation above the crowd.

An excellent exhibition of formation flying was given by three air mail planes, in charge of Pilots Nelson, Colter and Love. There was a demonstration of how air mail is handled at the flying field, and a cotton-dusting plane sprayed a white track across the field.

Hot Springs, Ark.—Leslie Body, Mgr. Chamber of Commerce greeting Capt. Ray Collins, Lt. Flo, Frank Blair and Dudley Waters.

Interior view of RB2 Transport plane as flown with Essex Coach, office equipment and eight men

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AUSTIN CO. OPENS CLEVELAND BRANCH

THE Austin Company, engineers and builders, whose national headquarters are located in Cleveland, has opened a branch office in Cincinnati, which brings the total of offices throughout the country to thirteen.

H. L. Cornelison, until recently manager of the Miami office, has been placed in charge of the new Cincinnati office. Territory covered by the Cincinnati office includes Southern Ohio, Southern Indiana and Kentucky. Over 200 industrial projects have been built by Austin in the Ohio Valley during the past five years.

The Chicago headquarters of the company moved to larger quarters at 510 North Dearborn Street on May 1st.

The Austin Company designed, built and equipped the largest aircraft factory ever constructed, namely, the Curtiss Airplane & Motor Corporation, Buffalo, which contained 27 acres under one roof. This enormous plant was constructed during the war in 120 working days, including equipment.

Austin engineers are prepared to offer suggestions, preliminary plans, approximate costs and building data for any type or kind of structure in the aircraft industry, including mooring masts, to be built anywhere in the United States.

Their new folder "Austin Builds For Aviation" is just off the press, a copy of which will be sent to any executive in the industry upon request.

P. & A. Photos.

Will Rogers and Casey Jones, who flew to New York to take part in the Mississippi Flood benefit performance.

AVIATION INSURANCE

A LONG felt want has been supplied by the issuance of aviation insurance coverage by the U. S. Life Insurance Company of which Barber and Baldwin, Inc., are the agents.

During the past few months just a little of such coverage has been available, but in extremely small amounts and applicable to only very limited classes of aviators. The policies now offered will be written up to $50,000 each, that is over five times the amount at present available. Coverage will be granted to every class of aviator and the additional rate will be dropped should the policyholder retire from flying.

NATIONAL COMMERCIAL AVIATION CONFERENCE

THE first national conference on commercial aviation will be held June 6 and 7 in St. Joseph, Missouri.

"The purpose of this conference," Carl H. Wolfley, director of aviation for the St. Joseph Chamber of Commerce, said, "is to stimulate nation-wide interest in commercial aviation through an educational campaign, and to obtain more support for air mail, passenger and express traffic."

The three air secretaries—F. Trubee Davison, of the war department; Edward P. Warner, of the navy department, and William P. McCracken, Jr., of the department of commerce—will be among those who will represent the government at the conference. Dr. George W. Lewis, of the National Advisory Committee on Aeronautics, also will be present.

Among those to be invited are presidents of all types of transportation companies, governors of states, mayors of principal cities within a radius of 1,000 miles, leaders in representative businesses and heads of national organizations, such as the Chamber of Commerce, Rotary, Kiwanis and Lions clubs.

Nearly 100 manufacturers of aircraft and about 75 manufacturers of aircraft accessories are expected to attend. Exhibits of many types of planes in service in air mail and passenger transportation will be made at the conference.

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brother to brother

[**Extract from a letter written by a prominent Auto Dealer in Oklahoma to his brother, who was considering the purchase of an airplane. The writer had bought a cheaper plane of another make and then bought a Travel Air.**]

He says, in part:

"Now, Ira, I think you understand that it is nothing whatever to me as to the ship you buy, providing however you got one which I consider safe, as I would not let you buy any kind of an old wreck if I could prevent it. I believe though that if you follow my advice you will be money ahead in the long run.

There is a lot of satisfaction in owning a good airplane for the feeling of safety that you get makes all the difference in the world as to the fun you will get from flying. There is also a lot of satisfaction in saying "Travel Air" when some one asks you what sort of a ship you have, for it's considered the country over as the best ship in the field and nearly every one who is flying the cheaper ships figures on their next ship being a Travel Air. I think the resale value alone will more than come back to you later on, for they are about the only ships that have a real value after they get a little age on them, should you want to sell it for some reason or other.

Before you do anything else, go down and see Beech, get him cornered in his office and make him fill up his pipe on Old English curve cut and talk it over. I am sure that he will try to get together with you. This sounds like I must be on the Travel Air payroll, but I sure am not, but telling you what I really believe would be the best thing for you to do."

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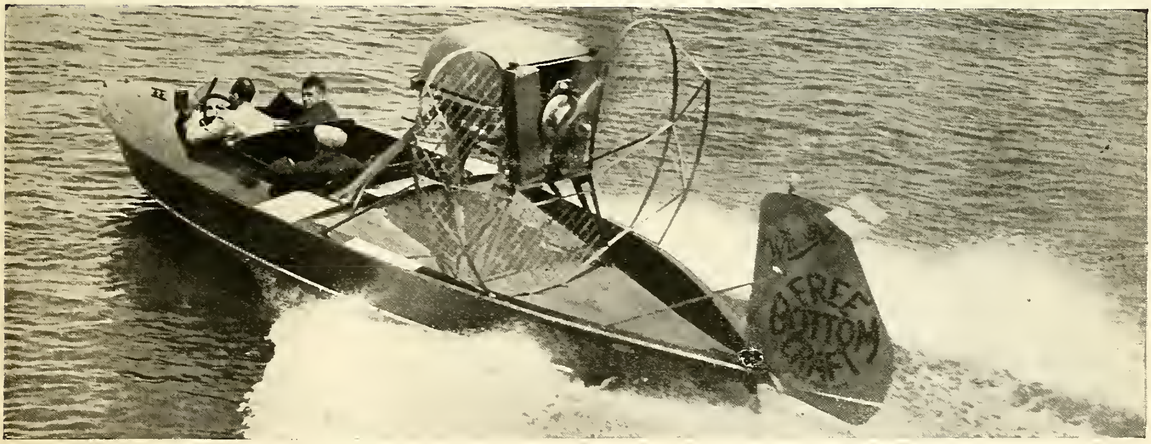

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OKLAHOMA AIRPORT

By Ernest W. Fair

According to present plans the O. K. Airport, north of the city is to be combined with the municipal field so as to make one large field for Oklahoma City. Bob Tarbutton is manager of this field while Burrell Tibbs is manager of the municipal field. The aviation committee of the Oklahoma City Chamber of Commerce, of which H. C. Martin is chairman, is supervising the work. It is expected that when the field is completed it will receive a first class A rating by the government and will be capable of landing any size plane.

The new east-west runway has been finished which forms a link with the north-south runway for an L landing and take-off. The new runway is 1800 feet long and 600 feet wide; the north-south runway is 600 feet wide and 2200 feet long. Drainage tile is being put in to insure use of the field in all kinds of weather.

Sixteen boundary lights have been erected to outline the L landing, and a lighthouse turret has been built above the N. A. T. hangar mounted on which is a large beacon. The Chamber of Commerce committee is also to soon erect two hangars on the north side of the field each capable of storing two planes.

THE HOUSTON AIR DEMONSTRATION

An air transport demonstration sans "stunts", devoted exclusively to the safe and sane features of aerial transportation attracted some 5000 Houston citizens to the Bellaire field of the Houston Aerial Transport Company on May 1.

No admission charge was exacted but the spectators were given the opportunity of giving free-will offerings to the Red Cross quota from Houston for the benefit of the Mississippi Valley flood sufferers.

Roger J. Seaman, assistant general manager of the Houston Chamber of Commerce, opened the program. Roy B. Nichols followed with a description of the air mail.

Major Walter H. Reid, commanding the 36th Division Air Service, flying a O2C Douglas observation plane from Ellington Field with "Air Mail" painted on the fuselage, demonstrated the loading and unloading of air mail while Captain Frank Hawks of the Raymond Pearson Aerial Company explained through the amplifiers the saving in time by using air mail service.

Another event was the taking off for Galveston of the Fokker monoplane, a five-passenger cabin ship, with passengers going to the Island City, piloted by Joe Ben Leveri. This plane arrived at the Bellaire field from Fort Worth with Underwood Nazro, vice president and general manager of the Gulf Production Company, and Bill Dunning, Jr., an independent oil man of Fort Worth.

The practical industrial uses of the airplane in aiding the agricultural needs of the country were demonstrated by cotton dusting planes of the Tips & Smith and the Quick Aerial companies.

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GOVERNMENT BIDS

Proposals for Bombardment Airplane.—Office of the Contracting Officer, Wright Field, Dayton, Ohio. Sealed proposals will be received here until 10:30 A. M., October 6, 1927, Eastern Standard Time, for the development of a Bombardment Airplane and furnishing proposed airplane in quantities of one, two, five, ten, twenty-five, fifty or one hundred, at Government's option. Further information on application.

McMULLEN GOES TO SOUTH AMERICA

W. H. "MAC" McMULLEN, one of the best known pilots of the Curtiss Flying Service, sails on June 2nd for South America to demonstrate Curtiss "Hawk" pursuit planes in Chile.

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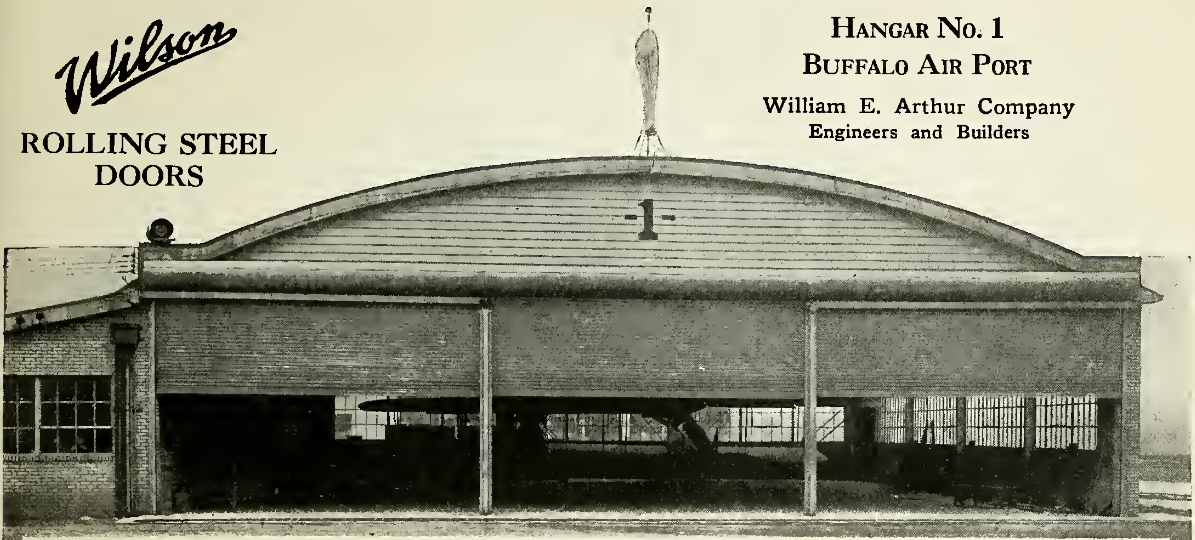

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12-cylinder 400 h.p. Liberty Motor, new, $1175. New OXX6 h.p. Curtiss, $600, or Navy overhauled, $375. New OX5 in original box, $450. New 220 h. p. Hispano, $350.

Government specification cotton cloth 50c yd. or 50 yds. or over, 49c yd.; or 100 yds. or over, 48c yd. 5-gal. fresh nitrate dope, $8.50, or 25-gal. or more at $1.40; or 50-gal. bbl., $67.50. 5-gal. acetate dope, $8; or 50-gal. drum, $55.

Linen and cotton covers all made up for Canuck, JN4D and J-1 Standard. Grade A cotton tape, scalloped, 5½c yd. or 112-yd. rolls at 5c yd.; grade A frayed tape, 4½c yd. or 100-yd. rolls at 4c yd.; ordinary cotton tape scalloped, 4c yd. or 130-yd. rolls at 3½c yd. No. 7 rib cord 1c yd. or $3 per lb. 10" double pointed needles, 35c; 14" single pointed needles, 50c; curved needles, 35c.

Canuck or JN4 upper or lower wings, covered, $90 each; Standard lower wings, covered, $90 each; Standard upper wings, $125 each. Crating additional at cost. 26 x 4 dandy unused tires, $7.50, or slightly used ones, $5, or moderately used ones, $3.50, or serviceable ones, requiring some repairing, $1.50. New production 26 x 4 tubes, $2.25. Stream lined 26 x 4 wheels, $10, or without stream lines, $8.50. DH wheels 750 x 125 mm., $10; 750 x 125 tires dandies, $10, or unused, passable, $7.50; adapters for converting DH wheels for use on Standard or Canuck or Jenny, $7.50. Surplus 750 x 125 tubes, $1.75, or new production tubes, $3.50. 20 x 4 wheels, $5, casings, serviceable, $10; surplus tubes, $1.50, or new production tubes, $2.75. Rotary map case—rotates as trip progresses, $3.50.

All parts for JN4D, Canuck, J-1 Standard, OX5, OXX6, and some Hispano, Liberty, LeRhone, Fiat, Lawrance, and Clerget parts.

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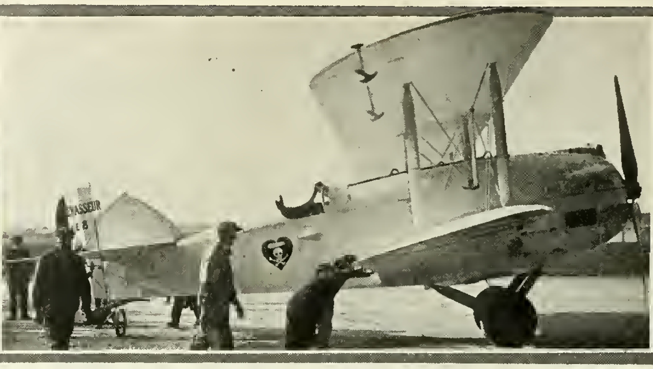
FOREIGN AERONAUTICAL NEWS IN BRIEF

Compiled from the foreign aeronautical press and the Transportation Division, Bureau of Foreign and Domestic Commerce.

Captain Charles Nungesser.



The "White Bird," their 450 h.p. Levasseur biplane.

P. & A. Photos.

Captain François Coli.

FRANCE

CAPTAIN CHARLES NUNGESSER and Captain François Coli, French Aces, took off from Le Bourget airport, Paris, at dawn on May 8th for a non-stop flight to New York and have not been heard from since. A search of land and sea around Newfoundland, where several citizens are reported to have heard the plane in the air about the hour it was due, has not yet revealed a clue as to their fate.

The 450 h.p. single-engined Levasseur biplane, "The White Bird," in which Nungesser and Coli made the attempt has a wing spread of 47 feet; overall length, 33 feet; height, approximately, 11 feet; weight, empty, 2,500 pounds; weight, loaded for flight, 9,240 pounds; motor, Lorraine, 450 h.p., capable of developing 525 h.p. The fuselage is of wood, shaped like a pontoon, to hold weight in water for twenty-four hours. Wings can be detached in thirty seconds in case of forced landing, leaving only the motor as dead weight. 950 gallons of gasoline were carried at the start of flight.

Many still have hopes that the flyers may have been forced down by fog and ice in the interior of Newfoundland or Labrador and may yet be rescued.

FOUR other entries have been made for the Paris-New York Flight: Pilot Tarascon, on a Bernard-Marie-Hubert plane, with Gnome-Rhone-Jupiter engine; Lieutenant Drouhin, on a Farman Goliath 1000 h.p. biplane, Farman engine; Costé, on a Breguet "19A2 Special" plane, Hispano-Suiza engine; and a Navy Department entry, on a bimotor Paulhan hydroplane.

AN international aviation and navigation exposition, to be known as the Premier Salon International de l'Aviation et de la Navigation de Marseille, is being organized at Marseille, France, for the month of June 25-July 25, 1927. The Societe Marseillaise de Navigation Aeriene, as organizers, have been assured the coöperation of governmental and commercial agencies.

Exhibitions from practically all the principal countries, including the United States, will be welcomed and will be admitted under the same conditions as laid down for French firms and individuals, except that for French exhibitions priority is reserved in the matter of drawing of places for stands. The exposition will be held in the Palais du Parc Amable-Chanot, erected a few years ago to house part of the exhibits of the great Colonial Exposition of Marseille. Among the exhibits which will be accepted are heavier-than-air machines of all kinds, motors and propellers, marine instruments, electrical appliances, photographic materials, accessories, and motor tires, etc.

STANDARD rates on mail from France to be carried by United States air mail services have been established. The rate is five francs (about 20 cents) per 20 grams or fraction thereof. This is in addition to the regular postal rates. Delivery by pneumatic tube system in the Paris area has been authorized upon letters sent by air mail from Strasbourg to Paris. The same system has been in use for letters sent by air mail from Marseilles and Lyon to Paris. A sur-charge, however, is required upon such letters. By this means, the delay in delivery between Le Bourget and the city of Paris is reduced.

SPAIN

THE first regular airline in Spain, started operations on April 29, between Lisbon and Seville by way of Madrid.

One flight will be made weekly, requiring six hours instead of the usual day and a half by train. The trip from Madrid to Lisbon will cost $64 and from Madrid to Seville $24, allowing 15 kilograms of baggage to be carried.

The airplanes used are equipped with three engines each, of a Dutch make of 194 horsepower and will accommodate four passengers and the pilot.

Similar lines from Madrid to Valencia, Barcelona and San Sebastian have been planned, as well as a route making the circuit from Madrid to Granada, Cordova, Seville, Jepez and Malaga to Madrid.

At the present time a French line from Toulouse to Casablanca makes stops at Larache and other Mediterranean Coast towns en route.

A Colon Transaerea, the company authorized to operate the air service between Seville, Spain, and Buenos Aires, Argentina, has been formed with a capital of 1,000,000 pesetas (about $170,000).

Herbert Photo.

King Alfonso signing the passenger list at the inauguration of the Lisbon-Madrid airline while Queen Victoria and officers of the Madrid flying field look on.

ITALY

COMMANDER FRANCESCO DE PINEDO, the world-famous Italian airman, was on the last lap of his trip from Italy to Africa, across the Atlantic, over the American jungles, across the United States and part of Canada to the Azores, when his plane was forced down by dense fog, and landed 150 miles from the Azores.

Pinedo hopped off from Trepassy, N. F., at dawn on May 23rd for the Azores, was forced down and was towed into Fayal, Azores, by the Italian steamer *Superga*. The flyer and his plane, the Santa Maria II, a duplicate of the Santa Maria I, described in detail in the May issue of AERO DIGEST, were uninjured and will resume the flight soon.

Commander de Pinedo resumed his four-continent flight in the Santa Maria II, after a forced wait due to the destruction of the Santa Maria I by fire on April 6th at Roosevelt Dam, Arizona. On May 8th he flew to Boston, then to Philadelphia, Memphis, Charleston, Chicago, Montreal and Trepassy, N. F.

PREMIER MUSSOLINI has recently established an aerial police force for Italy. Their planes will be identified, besides carrying lights, by flying a large yellow flag and having a broad yellow stripe painted across the wings, which will be military or built after a special pattern intended to assure great mobility and capability of maneuvering easily.

The traffic function of the air police is avowedly secondary to that of providing political policing in time of peace and a military reserve for a time of threatened war, since the unusual flying conditions afforded the new service are expected to train excellent battle pilots.

The personnel of the police machines, all of whom are members of the military services or Fascist militia, will have full powers in the air, the mere presence of police machine in any region being a sufficient indication to any private plane to leave the region speedily, or if a red light is shown to land immediately near by.

THE Trieste-Venice-Pavia-Turin air service was resumed on March 16, by the Societa Italiana Servizii Aerei, of Portorese (Istria), Italy. This service was temporarily discontinued during the winter months and was replaced by a Trieste-Venice service operated by the same company. The Trieste-Venice air service is discontinued from date of March 15. The Trieste-Venice-Pavia-Turin service will have daily departures in each direction, including Sundays, making two flights a day. Flying time from Trieste to Turin is approximately 5 hours and 10 minutes. Single motor seaplanes are used. The maximum passenger capacity is four, in addition to pilot and mechanic. New seaplanes are to be used by the line, beginning in the summer of 1927. The motors are all Lorraine-Dietrichs, and the special seaplanes were built at the Monfalcone yards of the Cantiere Navale Triestino. Buffet lunch service will be instituted when the tri-motor hydroplanes are used.

P. & A. Photo.

De Pinedo and the Hon. P. E. Balbo, Italian Air Minister.

THE second annual Aero Exhibition has just been held in connection with the Fiera di Milano. The Italian aircraft industry was represented by the following firms and exhibits: Macchi—M-39 racing seaplane; Savoia—model of the *Santa Maria;* Signor Piero Magni—touring monoplane *Vittoria;* Alfa Romeo—Bristol Jupiter engine, Alfa-Romeo Ro. 1 two-seater reconnaissance biplane; Caproni—commercial ten passenger transport plane; Breda—B-4 two-seater school biplane, B-7 all-metal reconnaissance monoplane; Agosto—glider with small auxiliary engine; Isotta-Fraschini—Asso 500 h.p. twelve-cylinder engine, semi-Asso 250 h.p. six-cylinder engine and a 600 h.p. geared Asso. Sixteen German firms and many French companies exhibited their products.

A NEW aircraft corporation has been recently formed in Rome under the name of the Italian Aero Consortium (Consorzio Aereo Italiano). The purpose of the corporation is to construct, trade in and operate aircraft on land and water routes.

ENGLAND

THE British "Report on the Progress of Civil Aviation" for the 9 months ended December 31, 1926, shows the following licenses and certificates issued year ended December, 1926, and the number of licenses and certificates current on December 31, 1926:

	Ended Dec., 1926	Current on Dec. 31, 1926
Pilots licenses	137	286
Navigators licenses	6	10
Ground Engineers	69	360
Registration certificates:		
Heavier-than-air Craft	104	268
Lighter-than-air Craft	5	15
Airworthiness Certificates:		
Heavier-than-air Craft	155	236*
Lighter-than-air Craft	1	1
Aerodrome licenses	148	41

* This figure includes 69 Certificates of Airworthiness for aircraft known to have been sold abroad.

The number of pilots' licenses issued shows a marked increase over that for 1925 due in part to the issuance of licenses to members of light airplane clubs.

Of the 268 airplanes and seaplanes registered on December 31, 1926, 216 machines, totaling 50,355 normal horsepower, were in civil employment and the remainder were experimental machines of military types in the hands of constructors.

Many of the new aerodromes licensed were sites used temporarily for "joy-riding". The 41 aerodrome licenses shown in the table as current on December 31, 1926, comprised: Aerodromes for public use (Government-owned), 5; aerodromes for public use (privately-owned), 11; aerodromes for joy-riding (privately-owned), 25.

The Air Navigation Directions, 1926 (A. N. D. 6) were issued October 30, 1926, amending in part and consolidating in one publication various directions issued during the years 1922-25.

The medical examination required for the renewal of a Class "A" pilot's license was abolished by the Air Navigation Directions.

THE Air League of the British Empire has received an offer of 5,000 pounds a year for two years, to be used in organization and propaganda work.

Underwood & Underwood.

The new Imperial Airways airliner flying over London.

AERO DIGEST will award a prize of $5 each month for the best humorous contribution published. Only those pertaining to the aircraft field will be considered. Address the "Picked From The Air" Department, Aero Digest, 220 West 42nd Street, New York, N. Y.

Cliff Pountney, Cleveland, Ohio, won the prize for June.

The meeting was over and the flyers filed into an ante-room which was strewn with flying paraphernalia, in the center a table lay covered with helmets and goggles.

Nonchalantly a young pilot walked up to the table and proceeded to smash the goggles pair after pair.

"What the hell do you think you are doing!" roared a pilot.

"My goggles!" bellowed another.

"I am looking for my goggles," replied the youngster. "They are unbreakable."

It Won't Be Long Now

By Milton Weiss

When I told the plot of this tale to a friend of mine, he said, "You're cuckoo!" Maybe he's right. But they they said that Marconi was "nuts" when he dreamed of sending messages without wires.

The year is 1950. New York City is a vast mass of flat-topped buildings, with curious looking mooring masts stuck on top, each surrounded by a series of lights.

Ed Bailey entered the ground entrance of the Seagull Checker Airdrome, stepped into a pneumatic tube and was shot up to the 100th floor in two seconds.

He walked over to the New Seagull and inspected the struts and stays. He put the gas hose into the tank and when the needle on his instrument board read two hundred gallons, he shut off the flow. His eye glanced at the helicopter, that strange mechanism which counteracted gravity and would allow the plane to remain motionless in the air. He touched a button with his foot and the supermagneto turned the blades around. His water-meter said full and his oil-gauge registered three hundred pounds. The cashier took the readings of his graph-chart clock and the mechanics wheeled the bus out.

The day was fine. The sun came out from behind a few light clouds and Ed cried, "All clear!" A mechanic echoed, "All clear." Ed stepped on his starter. The engine roared and then died to a hum as he throttled her down. He adjusted the radio ear phones over his cap and then, glancing at his board, he gripped the joy stick, tilted the wings, gave her the gun and was off.

He cruised around at a height of 25,000 feet, keeping close to the building tops to grab a call. On the top of Aircraft, Ltd., building a purple light flashed three times. Ed tilted his stick and shot down in a terrible nose dive. At his right he espied a Yellow Taxiplane also intent on the call. He took a chance and swerving to the right, he cut the Yellow off. As he zoomed across the Yellow's path, he heard the other switch on his helicopter and stall. Through the radio earphones he heard the yellow hackman call, "You muzzling dog, I'll get you yet." Ed flirted his tail skid derisively and made a perfect three-point landing on the roof. He hopped out of his plane and opened the door as an elderly woman swathed in furs bundled into the passenger compartment. She lit a cigarette and said:

"Young man, I have two hours and thirty-five minutes to catch the Paris-Vladivostoc Transcontinental. Take me to Somme flying field and step on it." Ed grinned and touched his cap. He leaped into the cockpit and his helicopter threshed the air. Straight up he rose until he spied the captive balloon of the international air police. It read "Nine thousand feet, speed limit six hundred miles per hour. No loitering!"

Ed touched the 'mag' button and his motor spun over, driving the plane ahead. The twin Guda Motors registered 7,600 revolutions per minute and his speedometer showed a direct speed of 450 miles per hour. He kept giving her the gun until the needle slowly crept up to five hundred miles. He glanced at his foot board and the clock was slowly ticking off the hundred miles.

The Atlantic Ocean was crossed without any difficulty. He flew over the signal light of Liverpool and ten minutes later passed London. Three minutes after that he saw the green light at Dover and cutting down to a height of 4000 feet he choked his speed to 400 miles per hour as traffic was getting heavier. He was forced to wait at Calais against the red light and his helicopter turned over. The lady rapped impatiently at the glass partition separating them, but he showed her by his wrist-watch that she had plenty of time. At last the Calais light turned green, and he shot ahead, threading his way between Gothas, Fords, Yellows and what-not.

Twenty minutes before time he made a landing on the Somme field and opened the door for his passenger.

She alighted and glancing at the clock asked, "How much is it?" Ed took the reading, "$475.00, Lady," he replied. The woman dug down into her knicker pocket and handed him a five hundred dollar bill. "Keep the change," she said. Ed thanked her and lighting a cigarette hopped into his plane.

He cruised empty to Italy, and picked up a call for Denmark. There he was fortunate and got a long trip to Canton, China. From China he got a call to the Philippines, and from there he took a joy-riding party to lower California. He knocked off to get a bite of lunch and filled up his tank with gas. His oil was getting low so he put in another twenty gallons of refined castor-oil. While he was recharging his fuel tanks, a flustered couple approached him.

They told him that they wanted to go to New York to get married. Ed made a flat rate of four hundred dollars with them and set off. He was careful not to look back into the glass partition. Necking parties were none of his business. He landed on the roof of the Municipal Building and let the couple off. They threw him a hundred dollar tip as a sign of their happiness. Ed laughed. He looked at his watch. It was six o'clock and getting dark. His meter showed bookings of three thousand dollars. Not a bad day's work. He pulled his plane over to the Seagull Checker Airdrome and pulled in.

He was checking up with the cashier when his old pal pulled in with a broken aileron. "Well, Pete," said Ed, "How's tricks?" "Lousy," muttered Pete, "I got three short trips, one to Chicago, one to Detroit, and one to Albany, then a muzzlin' Yellow cuts me off and crumples my aileron . . . then in the bargain an air cop scoots up and sends us both wireless tickets. I'm gonna quit the racket. A hackman never gets anywhere."

—Courtesy of the Taxi Weekly

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STATEMENT OF OWNERSHIP, MANAGEMENT, CIRCULATION, ETC. REQUIRED BY THE ACT OF CONGRESS, AUGUST 24, 1912.

of Aero Digest, published monthly at New York, N. Y., for April 1, 1927.

State of New York, }
County of New York, } ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Frank A. Tichenor, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Aero Digest, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Aeronautical Digest Publishing Corp., 220 West 42nd St., New York, N. Y.; Editor, J. E. Horsfall, 220 West 42nd St., New York, N. Y.; Managing Editor, None; Business Manager, Frank A. Tichenor, 220 West 42nd St., New York, N. Y.

2. That the owners are: The Aeronautical Digest Publishing Corp., 220 West 42nd St., New York, N. Y.; Abram Horsfall, Martinsburg, West Virginia; J. E. Horsfall, 220 West 42nd Street, New York, N. Y.; Frank A. Tichenor, 220 West 42nd St., New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

(Signed) FRANK A. TICHENOR.
Business Manager.

Sworn to and subscribed before me this 1st day of April, 1927.

(Signed) Anna Higgins.
Notary Public, New York County.
(My Commission expires March 30, 1928.)

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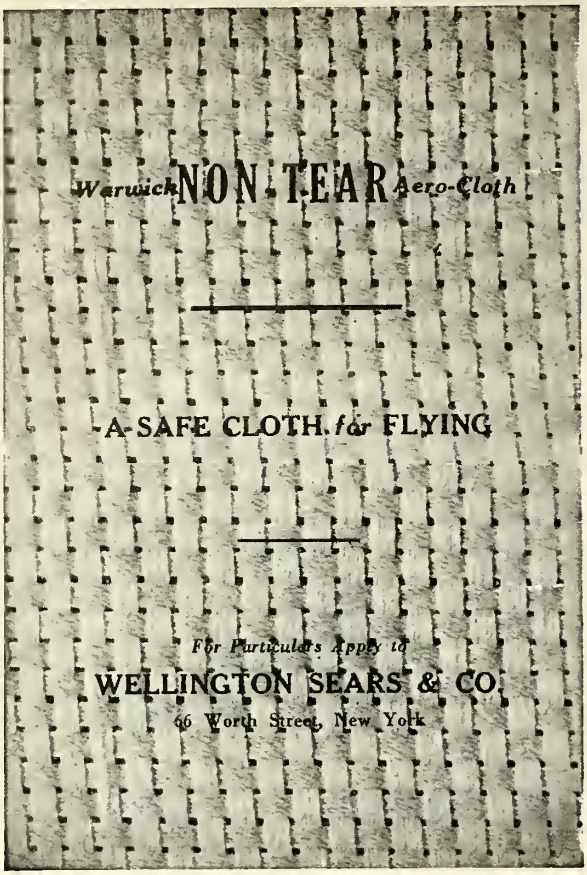
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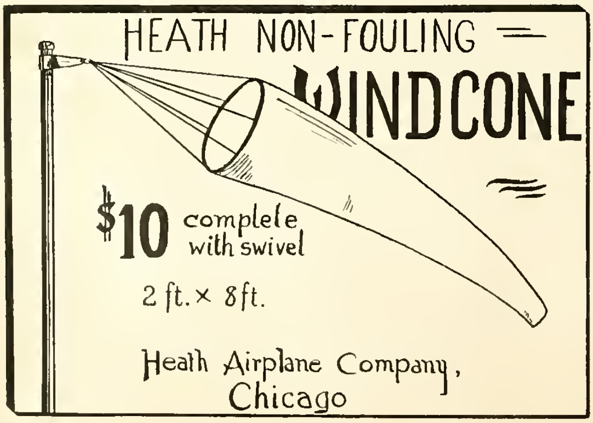
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A NOD AND A WINK

(Continued from page 561)

remarkably fine headway considering the stolid opposition they encountered from the fog-bound bozoes ensconced in the over-stuffed office chairs. "You gentlemen are going to see something really good in the flying line to-day." I said, with all the confidence of Wayne B. Wheeler giving an order to a Senator or Congressman. "I don't want you to feel hurt at the comparison between the American Navy and the English Navy, for naturally this is a younger and more virile country than you have over there in the old world. We pick up new ideas quickly; in fact, I guess we beat the world at taking on all the latest items of progress. So you mustn't mind if we've kind of left you behind in the naval aviation end. You must remember that the airplane was invented in this country, and we naturally got a good start on you."

My friend said he wouldn't mind, and would try to bear any discomfiture that might come to him if it was demonstrated that poor old England was actually swamped in aviation. He said the English Navy had been handicapped for funds, and so had the Royal Air Force, since the war, and that he wouldn't be a mite surprised if the planes attached to the Navy didn't number more than 1,000 all told. I said that we'd probably have more than that number right here in New York, for land knows we'd spent enough money on the Navy to get 10,000 airplanes. I admitted that men like Bellanca couldn't get a contract, while other men who hadn't turned out a real airplane since Donald Douglas stopped being their designer were making millions. I admitted that Marmon sedans being left down in Washington sometimes affected the situation, but still and all we had lots of planes, some of which were far superior to Jennies.

Well, anyhow, I'd been shouting about how well aviation had been doing things in the Navy, all things, animate and practically inanimate, considered, and I'd been sort of preparing my friends for the magnificent aerial fleet that would be cavorting above the surface vessels as they steamed up the harbor manned by their thirsty crews. When we crawled out of the snubway at South Ferry and made our way to a skyscraper near the Battery, my friend's father stopped at a drug store and purchased some absorbent cotton, for he said that he didn't want to be deafened by the roar of the hundreds of airplane motors that soon would be making their terrific din above his head. He wanted to know if he should buy smoked glasses to keep the flashing of the sun on the propellers from blinding him, but I told him he could close his eyes at intervals and rest them. I didn't want to see him spend too much on preparedness. "Now," I said, as we were whisked to the top of a tall building, "don't be nervous with all these planes overhead. They're the latest equipment, and may be depended upon to remain aloft almost indefinitely. None of them will fall on you—so you needn't open that umbrella."

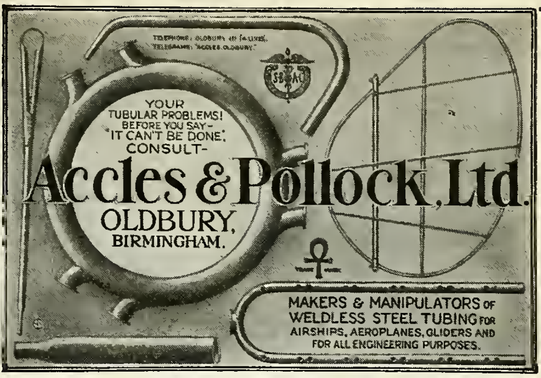
Well, we were there when the first boat appeared. It was a thing about the size of a Ford coupé, only it was painted grey. It was a captain's gig, from the Navy Yard. Everybody'd been expecting something about the size of the *Leviathan,* so when this thing appeared, we all felt sort of let down, as though the Navy had given us the horse laugh—the horse-marine laugh, you might say. But in a minute or two out of the mist—New York harbor is nearly always hiding in mist as though it was ashamed of itself—out came a sub chaser, for of course the Navy knew that we had quite a large German population here. But there wasn't a sub in sight, so along came the Navy, full blast. A flock of destroyers steamed by—they are certainly beautiful craft, those things—then light cruisers, and armored cruisers. Then the battleships!

What a wonderfully impressive sight they made, those old battleships! On they came, in stately and formidable array, grim old killers of the sea. The enshrouding curtain of mist was lifted from the waters by the warm rays of the morning sun, drawn back to the far shore of the harbor, disclosing ship after ship, steaming slowly and majestically up the river. As I looked at them plowing the still waters of the North River, saw the squat sturdy bulk of them moving toward me, I could understand how some old admiral who had spent his young manhood, his old age, loafing on their decks and in their comfortable cabins, should have grown to feel that they were invincible. The very size and weight of the ships, the vast bulk of them, caters to that belief; for without a shadow of doubt a first-line battleship is the most powerful looking weapon ever created by man. There is nothing that can touch it for sheer might and majesty. Even a land fort, perhaps with more hitting power, is not nearly so impressive; it is just so much concrete and guns.

But a battleship! Man, if you've seen one of them you wouldn't wonder that men believe in them—believe that they are impregnable to attack from an insignificant looking thing like a bombing plane. The way a battleship seems to squat sullenly on the water, the way it forges ahead with a sort of implacable surliness, the way its long rifles stick out belligerently fore and aft, all add an illusion of might, of power, to what is, after all, only some hunks of steel tacked together with rivets—rivets that an underwater bomb-explosion will tear loose, allowing the sad sea waves to seep within to annoy the gentlemen in their comfortable cabins, and finally to eject them unceremoniously.

There is indeed a sad thought, mates. As I watched those old sea fighters forge slowly past, my mind went back to the days when they had ruled the seas, undisturbed in their mighty possession, except only by the hard-hitting blows of some other old warrier like themselves. And it was hard to realize—even for me who knows many wonderful things, such as how to get whiskey in Wichita, Kansas, and amusement in Philadelphia—even for me it was hard to realize that these magnificent ships were only grim grey ghosts from a rapidly vanishing past; that in a few more years—perhaps twenty, which is a short time in the history of warfare—these beautiful creations of man would go to join the Roman Galleys, the frigates of Nelson, the *Monitor* and the *Merrimac* of the Civil War, and live thereafter only in history.

As I stood there on the roof of that skyscraper in Lower Manhattan, a great feeling of sadness swept over me—I had been sipping my flask of gin and it wasn't working exactly right—and I thought of many things: of this great world of change, of the decay of fondest hopes, of most cherished illusions, of the ineffable sadness of this fleeting life. To others, perhaps, that line of battleships represented power that would go on without end; to me it was merely the passing parade of dying majesty. I could see, I thought, further ahead than could those fine old men who trod the decks of those splendid ships in all the pomp and circumstance of naval dignity and tradition. I could understand why they admired and loved their ships—for I could admire and love them too. And as the flagship steamed past, I found myself wishing that none of this would



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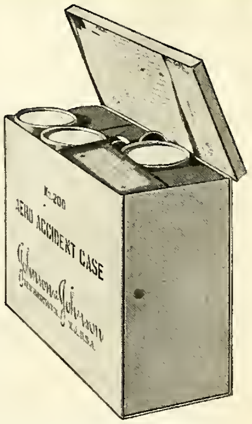

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change; that these good ships, with these good men aboard, would continue to police the seas, and not give place to little buzzing hornets dealing death from twenty thousand feet above. I wished that—I who had made my living in the air for eleven years, who make my living now by writing of it —I wished those ships would live forever.

But I knew that such a wish would not be granted. I knew, as certainly as I know that I am sitting here now, that all of this must pass, that all of these great ships must go at last to the ship-breaker or to the bottom—and that some time in the not so distant future, no such ships would be built to take their place. It is on the cards. Progress and invention move forward even more implacably than do these old ships; and now that progress has taken to the air, it moves on wings.

However, I wiped the tear from my eye and looked about me for the aerial armada which I had been informed by the press would accompany the fleet to its resting place in the Hudson. The mist was gone, the sun beamed down from an almost cloudless sky, the water of the harbor, of the river, was brightly blue. On it steamed the long majestic line of vessels in all their dignity. And above them flew the aerial forces of the United States Navy—one ancient, moth-eaten, weather-worn U O 1, with a 200 h.p. pop-bottle engine!

I do not exaggerate. I am not even cracking one of my feeble jokes. There passed the 130 war vessels of this great country; and there flew that *one* poor little U O. There, in that one little fish-fly, was concentrated, so far as New York knew to the contrary, the Navy's entire air power!

I was stunned. I was simply flabbergasted, as we Navy men say. Douse my glim and shiver my timbers if I warn't, mates! There I had these two Englishmen, to whom I had been bragging of aeronautical progress—and there I had one poor little plane to show them! Hurriedly I reached over and pulled the cotton from my friend's father's ears—so the little engine would sound louder to him. I also gave each of them a pull at my flask, hoping that they would see at least two airplanes. If I'd had enough of this synthetic gin I manufacture, I have no doubt that these Englishmen would have gained a better impression of our Navy. But with the small flask I had, the best I could do was to raise the Navy's ante to two. However, I had done my best to create an impression of aerial magnificence—and greater love hath no man than this: that he is willing to sacrifice his thirst for his country.

But imagine my amazement when upon examining that one little seaplane more closely I discovered that it was not part of the Fleet at all. It belonged to the Naval Reserve at Far Rockaway and was merely a visitor like myself. How the Navy ever let this poor little mite slip into the parade without making some effort to shoot it down, I don't know. And whatever credit is due for even this pathetic aerial display goes to Commander Kendall or Lieutenant Jack Iseman.

Hours later, I read in the papers that some piece of machinery aboard the *Langley* had blown up, which left that noble vessel helplessly rolling in the trough of the sea, unable to continue its way into port. It was taken in tow and arrived hours later, accompanied by a Staten Island ferry boat, by way of further disgrace. Perhaps this explains why all the aircraft were not in the air—though this accident happened to the *Langley* just off Sandy Hook—as that old Scotchman informed the reporters. And there is no reason why the planes could not have flown the few miles to shore, put on a demonstration, and returned either to the *Langley* or to Mitchell Field—except that the name of Mitchell has unpleasant associations for the Navy, ever since Bill blew up the *Ostfriesland* and other battleships in his bombing tests.

No, I cannot think this accident to the *Langley* had anything to do with the aircraft not being displayed—for on the battleships were several small scouting planes which could have been catapulted, to put on a show and land in New Jersey. But that wasn't done. It seemed to be the policy of the Navy to show New York their utter contempt for aircraft, by not using them at all—except that one U O which was displayed apparently as a curio. I hope that they are going to be as successful in treating with contempt the aircraft of some enemy power that may care to take issue with them in the future. Perhaps, after all, that is the wise policy for the Navy to follow regarding airplanes—simply to ignore the nasty things.

And lest you jump to the rash conclusion that the airplanes weren't flown because there was no flying personnel on hand to fly them, let me assure you that the boys were all there—chained to the deck. In fact, Mr. Assistant Secretory in charge of Aeronautics Warner was aboard the *Langley*—so aviation must have been as well looked after as it is possible to look after it in the Navy. The Boss himself was on deck, textbook in hand, in all the stately composure of his pedagogical demeanor. And when that generator aboard the *Langley* blew up, Mr. Assistant Secretary Warner was placed tenderly aboard a tug, and landed on shore, where he belongs.

The sorry truth of the matter seems to be that an Assistant Secretary for Air in the Navy has about as much power to make the Navy use airplanes as have I—or Carrie Nation, God rest her soul. The poor fellow is helpless. The fault does not lie in the man; it lies in the nature of his occupation. The present occupant of the post probably has as much technical knowledge of aircraft as any man in the world possesses, and he is a sane and sensible man. But so far as battling with the hardened office sea-dogs goes, he's in much the same position as that occupied by an amiable woolly lamb who is trying to induce a full-grown sperm whale to stand of its head, balanced on a billiard ball, and wave its tail in the air.

There is only one solution of this problem visible to me—to place in charge of the Navy itself an intelligent man who is able to see a little further ahead than the end of his nose, who can sense what is coming, what Fate holds in its bag of tricks. Such a man is Mr. Will Rogers, if he can be prevailed upon to give up his present work of lecturing, and confine himself to writing and to running the Navy. He could do both jobs—and working only half his time at it would be the best Secretary of the Navy this country ever has had. And he wouldn't even have to stretch himself to better the record of some of them. There is the sainted Josephus of grape-juice fame, the careful Curtis of bed-time yarn literature! Will wouldn't have to break into a trot to out-distance these lads.

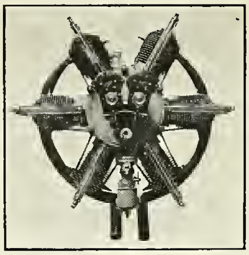
Now, don't mistake me, you six readers. We don't want Will Rogers placed in charge of aviation in the Navy—he'd be buried there just as surely and comfortably as the present incumbent is buried. We want Mr. Rogers in charge of the Navy—and then aviation, as well as the Navy, will get a square deal. Furthermore, Rogers is not one of these optimistic nit-wits who are such eager air-fans that they would scrap the Navy—before they have anything adequate to replace it—Rogers would see to it that flying was encouraged to develop equally with floating. But he wouldn't be simple enough to pin all his hopes on flying—as the present heads pin their faith on floating. Aviation is a gradual growth—a process of evolution like everything else in the universe—and only the foolish expect too much of it at the start. Will Rogers is sensible enough to know such things. He would be an excellent man for Secretary of the Navy. And what a change that would be.

Well, having got Will headed in the right direction, I'll get back on that roof I fell off of a while ago, and tell you the sad, sad tale of the battleship *Colorado*—Muduro. The Colorado is a super-dreadnaught, which means that it gets just as rusty as an ordinary battleship, and sinks just as fast under the proper treatment, but weighs more. There are other minor differences between an ordinary war vessel and one of these super boats, but that one of weight is the most noticeable difference to ordinary landlubbers. It is very, very heavy. If it ever wanders out of the water and starts climbing ashore, you have the very devil and all of a time persuading it to crawl back into the water again. It just sits down and growls, and you can't do a thing with it.

Well, we were watching this *Colorado* steam slowly past the Battery, and turn to go up the East River to the Navy yard—where Rear Admiral Plunkett lives when he isn't over at the Women's Club. It was going along nicely, when all of a sudden it stopped—UNK!—just like that. And it stayed stopped, what's more, stuck fast on the mud and rock of Diamond Reef—so called because Mr. Tiffany of Fifth Avenue stubbed his toe on it when he first came to New York.

Well, lads, first they got all the crew into the water, and told them to push, while the Captain stood on the bridge shouting, "Yo! Heave ho!" at appropriate intervals. The *Colorado* merely yawned and settled down to sleep. Then they got out the midshipmites and the crew of the captain's gig, the lieutenants and the commanders, and even the chief petty officer. "Gangway for a petty officer!" resounded on all sides as he threw himself into the fray. The *Colorado* merely grunted disgustedly and snuggled deeper into the mud. Then they called for tugs. The tugs tugged, the engines chugged, the Captain cursed. And the *Colorado* laughed at them and went to sleep. The status quo remained distinctly quo for a whole day—until the Navy had spent $75,000 for lighters to remove the oil and shells and other heavy stuff, and until every tug in New York harbor had tailed onto the *Colorado*. The *Colorado* grinned malevolently—and slipped off the reef. And that was that. But when they got it into dry-dock, they found that the keel was damaged, twenty feet of the hull and bilge keel were indented. The port anti-rolling fin was twisted, the port propeller was split—and the repair bill will be $100,000. And that was that, and there you are.

But let's think about the *Colorado* as she has paused so obligingly before us. She cost $40,000,000 and needs $40,000,000 more of cruisers, destroyers, and supply ships to protect her and service her—and all she can do is to punch a $175,000 hole in her bottom. Eighty million dollars! More money than you and I will earn in a year! Just think of it! At the liberal price of $25,000 each, that amount will buy 3,200 first-class, modern, high-powered bombing planes—or 2,000 bombing planes and over 2,000 pursuit planes. And the cost of manning and servicing those airplanes would be less than the cost of manning and servicing that one battleship and the various other ships



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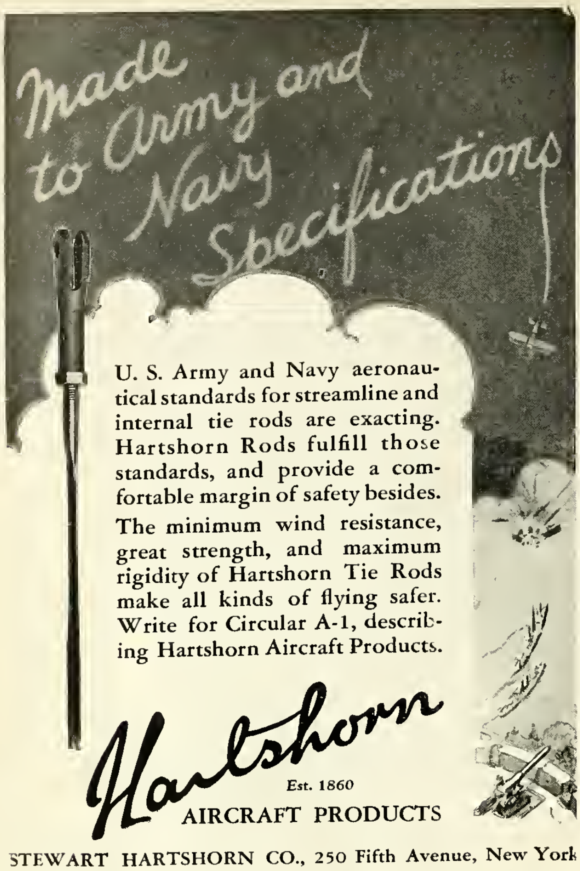

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and repair bases needed to keep the thing afloat as a fighting unit. And is there anyone left in the world, outside of a navy, who thinks that one battleship and the smaller ships, or sea-lice that accompany it, can protect the United States from any kind of enemy attack as efficiently as can 4,000 airplanes? Such a question requires no answer—except from the Navy, and they haven't an answer available.

And when I say "Navy," recall again that I do not refer to the Bureau of Aeronautics and the flying personnel, who are doing their best, not only unaided and unappreciated, but actually hampered, or, as in the case of the display at New York, treated with silent contempt by the High Command.

AND now, just a word for the tiny tots—just a little nod and a wink for the children, bless their little innocent souls, before I toddle off home. This is the children's hour now, you big grown-up folks. And I've two sweet little items for the tots.

The first is about Fort Jay. Does any little boy know where Fort Jay is? Any little girl? Well, it isn't very well or very favorably known, but it's an army post on Governor's Island, New York. Now, don't confuse that with Ellis Island. That's where the people land who want to come to this country to work. Governor's Island is where they go when they get too lazy to work.

Well, kiddies, they had a Horse Show at Fort Jay—Jay—there's something familiar about that word, but I can't place it—Jay. Well, never mind. They had the Horse Show. And what do you think they did? They gave a prize for the best bugler—I believe they gave him a saxophone and a handkerchief to wipe it off with. Then the "best dressed soldier" prize went to Private Heslin of Company B. I suppose they gave him a vanity case—it doesn't say. Then there was a blue ribbon for "the handsomest horse," though I have no doubt whatever that the handsomest horse would have preferred a spoonful of oats. A goat now—well, a goat would as soon eat a blue ribbon as anything else. But a horse— However, there you are. But, really, it's real cute, isn't it? The whole idea, I mean?

Well, word of all this must have reached Porter Adams of the N. A. A., for the N. A. A. booth at the All American Aircraft Exhibit at Washington was adorned with a sign saying that for the best essay on what the Aircraft Exhibit had taugh them, that the N. A. A. would present to the children of Washington a—what do you think?—why, yes, of course! As soon as I mentioned Porter Adams you knew what the prize would be. Yes, indeed, indeed. Dear me, yes, It was a wrist watch.

Porter Adams! Wrist watch! And my flask is empty. Come, Mrs. Cy—let's toddle off home. Send that sailor back to the Navy.

AIR—HOT AND OTHERWISE

(Continued from page 559)

with the General. But even so, Leon Bailby in L'Intransigeant, defended stunts.

"All the French airmen who have died," he wrote, "went on their adventures as voluntary service. The heart has its arguments against General Duval's conclusions. Their self-abnegation was of such a moral grandeur that even though in their deaths the country mourns, it is the richer for their example."

Two points of view. Both impressive. Probably both right. Very interesting.

The Washington Exhibit not only advertised commercial aviation with the public, but brought exhibitors together. They had chances to explain what they had done and to tell their theories of what the future may develop. Everybody profited. From all parts of the country, those interested in aeronautics congregated and among these were very many who by no means are financially attached to the industry. At our own booth, we were astonished by the number of keen business people in widely separated other lines who realize that commercial aviation has potentially great importance to them and who therefore wish to keep abreast of its developments whether or not they have direct links with it now. At one moment at the Aero Digest booth, we had men outside the industry from North Carolina, California and New York. Nearly all the States and territories were represented by our visitors during the show.

Among these visitors were sales managers and salesmen of many nationally advertised products of all sorts, men of business acumen and enterprise, realizing the part which commercial aviation ere long must play in almost every line of American business life. Most of them have learned what air mail may mean to them. Now they want to know what further meaning air transport may have. Bankers were there, insurance representatives were there, business men of all sorts, and by no means all of them of local residence, were there. It was cheering.

WE cannot comment upon all exhibits at the show, but all deserved it. This is a great month in aeronautics. Lindbergh's flight is overshadowing and space-eating. But it must be said that the National Air Tour used the Show as an opportunity to get together everyone concerned and talk over this year's event.

At a dinner given by the Detroit Chamber of Commerce were representatives of nearly every branch of the aircraft industry.

While the National Air Tour is Detroit's Show and has been regarded by some as Detroit's particular stunt, everyone was interested in the effort to make dates, plans and regulations which would be generally satisfactory. No such representative gathering ever could have been congregated in Detroit. The manager of the tour wanted to discover what the industry wants of it and went there to Washington to find out.

They did find out. The result is that this year's tour will be bigger than ever, the dates and itinerary will be pleasing to everyone and complete understanding will prevail.

This was only one of the worth-while details of the show in which Detroit did itself particularly well throughout, through its able representatives, Harvey Campbell, Ray Cooper, manager of the Tour, Frank Bogart, William Mayo, Bill Stout, Louis Meister, William Mara and others—a live group, working 100 per cent for aviation.

FLYING FACTS AND FIGURES

(Concluded from page 574)

of Travel Airs. One big bunch of cabin planes, with brakes and lights 'n'ev'rything, was marked N. A. T., and will be carrying mail and express and passengers from New York to Texas, probably, very soon after this lies before the eye of the reader, And then we saw the Swallow factory, another going enterprise.

There's a company down at Tulsa, Okla., making a Spartan plane, I told him; but we'll have to hurry to get through this spring. Next stop is Denver. The Alexander Eaglerock, there, gave him something more to think about.

I could show you aircraft factories all the way down the Pacific coast, from Seattle to San Diego, I said; but if you look through AERO DIGEST for March you'll see so many of their ads that it will keep you reading for several evenings.

Of the big ones, there are the Boeings at Seattle; the Douglas and Bach companies at Santa Monica, Ryan Airlines at San Diego, the Stearmans and Catron and Fisk at Venice, International at Long Beach, Prest at Arlington, Irwin at Sacramento, Kinner and Waterhouse at Glendale, W-F-W at Los Angeles, and many others.

BUT who is going to buy them, he wanted to know. All kinds of folks, I told him. First, the government; that's all of us. Then the air mail contractors, and operators of regular commercial lines; aerial taxi companies and operators of flying fields; business men, and finally, good sports—folks who will fly just for the pleasure of flying.

Thus, and still further, I loaded my friend with the statistics of aircraft manufacture and the development of air transportation. It was a story of fact charged with romance for me. Hard-headed business men may think it more romantic than the thrill of flying which captivated a lot of us, years ago. If the reader does not find romance here, where will he find it?

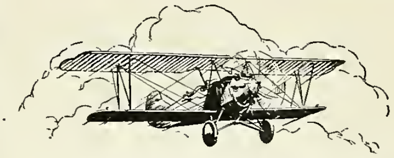
THE FLIGHT SCHOOL

(Concluded from page 564)

ing. If he were to overlook a serious ocular defect, the result might be a crash. From the point of view of practical flying, certain faults disqualify as definitely as defective eyesight. Failure to recognize serious skids or dangerously flat glides is conclusive evidence of lack of aptitude for flying. The student cannot judge his own ability reliably any more than he can his own vision. It is therefore the obligation of the flight school to furnish him on completion of his dual work with a full analysis of his aptitude on the basis of the known standards of flight training. If he then decides to solo, he does so fully aware of his qualifications for it.

Various flight schools are now offering well-planned and thorough courses in practical flying. These are ordinarily divided into primary, intermediate and advanced courses. Such schools can do aviation a vital service by emphasizing to their students the importance of advanced work. The maneuvers included are not frills designed to make training more difficult and expensive. The ability to perform them may some time mean the difference between a safe landing and a wrecked plane. For instance, forced landings on cross-country flights are an essential part of an advanced course. If the student waits until his motor actually stops before he attempts such a landing, the chances are ten to one that a crash will be the result. But if he has prepared for it properly under guidance of his instructor, motor failure is merely an incident of the trip. The majority of students can develop into competent pilots, but not in ten hours' time. The cost of advanced training is a very small fraction of its value.

The flight school must be recognized as a vital part of the growing structure of American aviation. Its function, the safe and effective training of students, is an essential one in the future progress of flying. There is only one way to learn to fly properly. Go to an established school and take all the training it offers.



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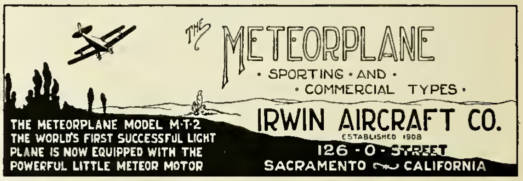

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NEW DH CASINGS FOR SALE, 750 x 125, while they last for $8 each. Booster mags new, $10 each. RUSH SALES COMPANY, 150 North 5th Street, Wyandotte, Mich.

Two-seater NEIUPORT AEROPLANE, dual control. Excellent condition. Owner going abroad. $350 unassembled. Quick sale. CAPTAIN H. GIBBS-WARD, Rolls Royce, Long Island City.

FOR SALE: One nearly new OX5 Standard guaranteed to be in excellent condition. Will take an automobile in trade. Price $675.00. M. A. CHIAROTTINO, Callao, Missouri.

FOR SALE: Curtiss Seagull with C-6-A Motor. Ready for flying. P. TALBOT, 19 Mt. Vernon Street, Newport, R. I.

FOR SALE: One brand new Wright-Morehouse 80 cu. in. motor. Latest type with heavy crankshaft. BOX No. 546, AERO DIGEST.

FOR SALE: A few Wright H. S. Engines, Model A, 150 h.p., with salt-cooled valves; re-conditioned, completely overhauled and bench tested. These engines may be inspected during assembly or testing at plant. Inquiry invited. BOX 26, Station A, Dayton, Ohio.

EX-ARMY PILOT wanted at once. Have Waco plane and agency—Eastman K5 Aerial Camera, good flying field, hangar and equipment in good money-making territory. Established over three years. Only pilots having experience making aerial obliques and maps, with good flying record need apply. Address M. A. C. JOHNSON, c/o BREVARD AIRCRAFT CORPORATION, Brevard, N. C.

WANTED: Immediate rental of parachute for one month, notify: DR. H. K. BLAKE, Memorial Hospital, 2 West 106th Street, City.

FOR SALE New Standard three-place OXX6 turns 1500. For quick sale, $1200. Also Standard five-place C6-160 h.p., complete except the wings. L. H. SCOTT AVIATION COMPANY, Marietta, Ohio.

FOR SALE: One 350 h.p. Liberty 12 motor, fully equipped, total time 25 hours, guaranteed A-1 condition, price $800. One K-6 motor, completely overhauled, C-6 camshafts and bearings, Bosch magneto, fully equipped, A-1 condition, price $400. RICHMOND AIRWAYS, INC., 1 Annadale Road, Greenridge, Staten Island, N. Y.

SELLING OUT: OX5 motors, OX5 motor parts, Curtiss JN-4D airplanes and parts for same. Canuck wings and tail surfaces. Write your wants to S. & W. AIRPLANE CO., Macon, Ga., and the price will surprise you.

YOUNG MAN graduate of American School of Aviation, also Petz Automobile School, desires work as mechanic's helper, or, will work way through flying school. Three years' practical experience on automobile motors. Energetic, dependable, good character. ROBERT KEHR, Route No. 3, Perkasie, Pa.

WANTED: Irvin Air Chute (28 foot seat pack) used, in first class condition. WM. JAHUKE, 86 Prospect Terrace, East Rutherford, N. J.

NEW DH CASINGS FOR SALE, 750 x 125, while they last for $8 each. Booster mags new, $10 each. RUSH SALES COMPANY, 158 N. 5th Street, Wyandotte, Mich.

FIVE-PASSENGER HISSO STANDARD, motor just rebuilt, new covering, Ti-two dope, extra set wings, $1,150. One E Hisso same as new $500. One overhauled OX5 $150. New OX5 intake Hs 75c each. H. F. PARKER, 18 N. Franklin St., Danville, Illinois.

PARACHUTES, new and used, for ships of all types, rope ladders for stunt men, etc. Specify weight. Established 1903. THOMPSON BROS. BALLOON CO., Aurora, Ill.

NEW OX5 MOTORS $295, Government overhauled OX5 for $195; used ones at $95. Motors can be inspected at York, KARL ORT, York, Pa.

YOUNG MAN with good education wants to work way through aviation training. A real follower of aeronautics. WALTER CANTRELL, Spartanburg, S. C. R-1.

CAPITAL WANTED for Adjustable Propeller Patent. Half or entire interest for sale. Basic ideas of new type construction. A real future assured parties taking an interest now to build models for test work. Write: E. T. GOVE, 37 Lake Avenue, Piedmont, Calif.

WANTED a fixed radial motor, Anzani, Rhone or other make A1 condition, complete and ready to run. Address C. J. LAKE, P. O. Box 556, Bridgeport, Conn.

WANTED: Some good pilots to take sub agency for Alexander Eaglerock for Ohio & W. Va. For sale: New OXX6 Standard (had 20 hours) $1200. L. H. SCOTT, Marietta, Ohio.

FOR SALE: Two sets of bound volumes of the Technical Reports of the British Advisory Committee for Aeronautics from 1918 to 1925 inclusive. Will sell at cost. BOX 547 Aero Digest.

WANTED: Pitcairn Orowing. Must be in good condition and will pay cash. AIRVIEW, INC., 211 Broadway, Long Branch, N. J.

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Vol. XI. No. 1 JULY 1927 25 CENTS

AERO DIGEST

CHAMBERLIN'S FLIGHT TO GERMANY

PACIFIC FLIGHT — Lindbergh — BYRD'S FLIGHT

MAJ.-GEN. PATRICK BRIG.-GEN. FECHET

A Splitdorf Airplane Magneto built for perfect performance under all conditions . . .

THE Splitdorf Model VA Double Magneto is an advanced type of instrument, the product of years of experience in building ignition devices for both military and commercial ships.

The outstanding features of this magneto are its absolute dependability, its extraordinary light weight, and its mechanical simplicity and compactness. It operates on the inductor principle delivering two hot sparks simultaneously or at spaced intervals, like two independent ignition units.

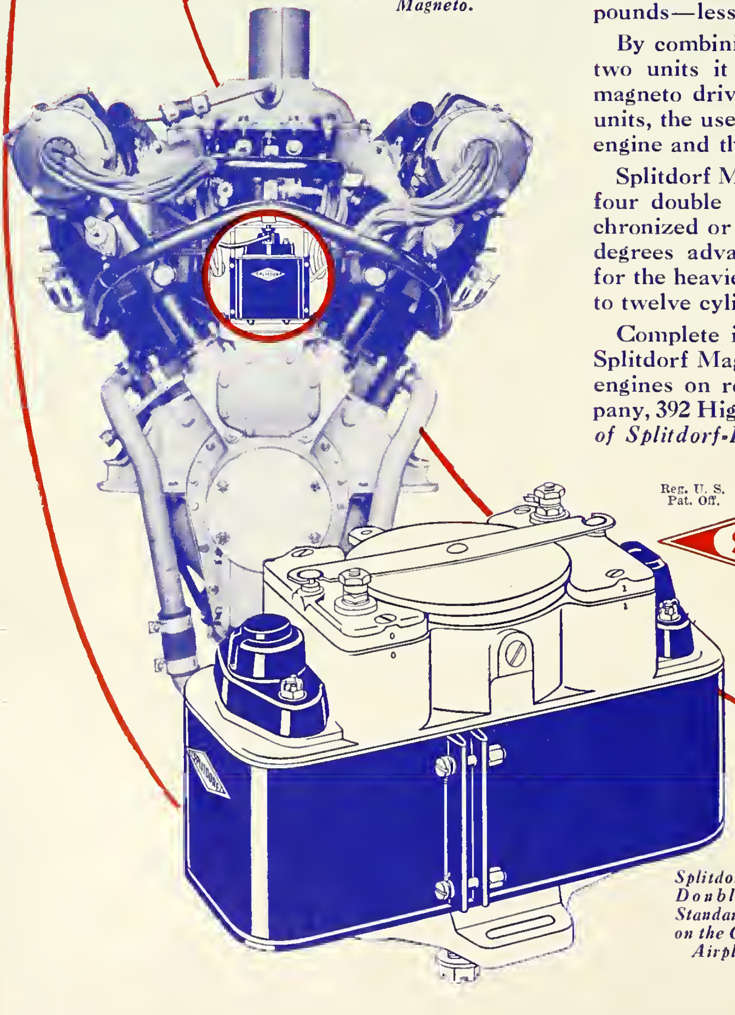
It weighs, without distributor blocks, 13½ pounds—less than any single aircraft magneto.

By combining the properties and functions of two units it reduces by half the complicated magneto drives and accessories of independent units, the use of which adds to the length of the engine and the weight of the power plant.

Splitdorf Model VA Double Magneto supplies four double sparks per revolution, either synchronized or staggered, and is provided with 30 degrees advance. This instrument is suitable for the heaviest types of engines with from four to twelve cylinders.

Complete information on Model VA and on Splitdorf Magnetos for other classes of airplane engines on request. Splitdorf Electrical Company, 392 High Street, Newark, N. J. *Subsidiary of Splitdorf-Bethlehem Electrical Company.*

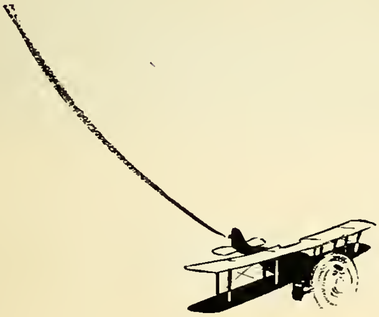
Reg. U. S. Pat. Off. TRADE **SPLITDORF** MARK Established 1858



A Curtiss V-1550 Airplane Engine equipped with a Splitdorf Model VA Double Magneto.

Splitdorf Model VA Double Magneto. Standard equipment on the Curtiss V-1550 Airplane Engine.

AERO DIGEST, *July, 1927. Published every month. Volume XI, Number 1. Publication office, 220 West 42nd Street, New York, N. Y. Subscription price $3.00 a year; single copies, 25 cents; foreign subscriptions, $4.00. Entered as second-class matter July 17, 1922, at the Post Office at New York, N. Y., under the Act of April 3, 1879. Copyrighted, 1927, by Aeronautical Digest Publishing Corporation.*



BOEING

THE growth of the Boeing Airplane Company is one of those astounding developments with which America is startling the world. A factory personnel, chosen for achievement and ability * * * * factory buildings originally designed for future expansion, rather than for past needs * * * * competent aeronautical engineers creating new designs * * * * these, and many other factors have surely played their part in the earned reputation behind every Boeing plane.

Boeing Airplane Co.
Seattle, Washington

Mail by Air and Speed it There

KEEPING PACE WITH THE TIMES

SUNDAY CROWDS AT CURTISS FIELD

THE recent trans-Atlantic flights of Lindbergh and Chamberlin have given tremendous impetus to public interest in commercial flying.

Curtiss Flying Service, Inc., is keeping pace with the times. This "oldest flying organization in the world" has recently increased its operating equipment and is now better fitted than ever to provide all classes of commercial flying service.

Instruction: Special new flying course to qualify students as Reserve Officers. Also standard short flying course.

Passenger Service: Short "pleasure hops" or fast long-distance transportation—at a moment's notice.

Industrial Applications: Agricultural dusting, forestry patrol, photographic mapping, etc.

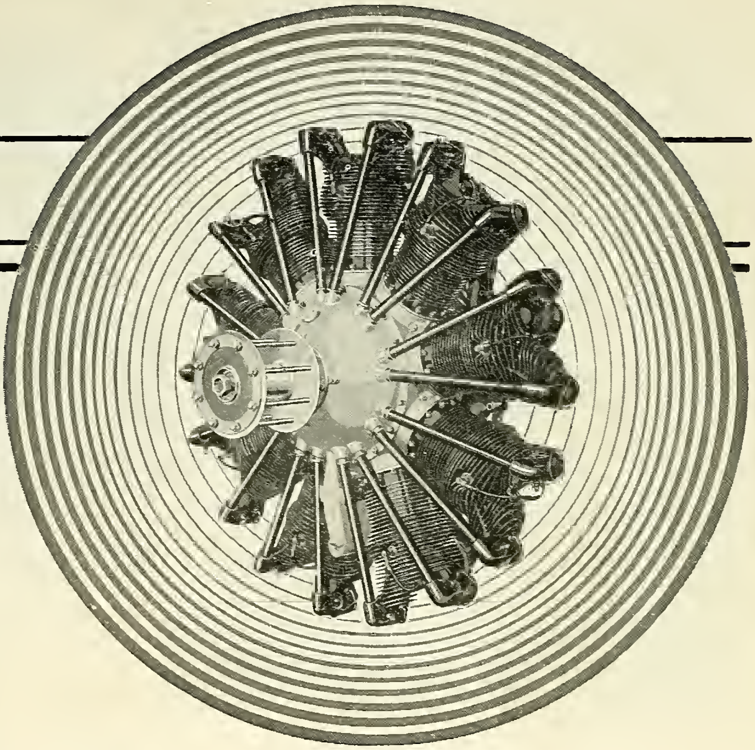
THE CURTISS FLYING SERVICE, Inc.

CLINTON ROAD GARDEN CITY, N. Y.

"Oldest Flying Organization in the World"

Curtiss

Wasp & Hornet
LEADERSHIP



The Wasp
425 H.P.
at 1900 R.P.M.
Weight 650 lbs.

The Hornet
525 H.P.
at 1900 R.P.M.
Weight 750 lbs.

These unique features have been developed and proved by Pratt & Whitney engines

1. One piece Master Connecting Rod and Built-up Crankshaft
2. Divided and Forged Aluminum Main Crankcase
3. Grouping of all accessories at the rear of the engine
4. Complete enclosure of all working parts

The fundamental design improvements of the Wasp and the Hornet have considerably influenced all new air-cooled radial engines, and entirely new fields have been created for this type of aircraft power plant.

THE
PRATT & WHITNEY AIRCRAFT CO.
HARTFORD CONNECTICUT

DEPENDABLE ENGINES

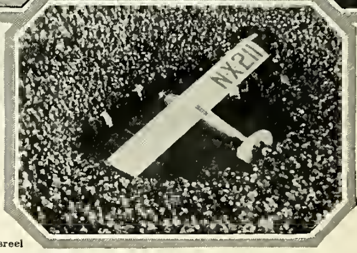
COLONEL CHARLES LINDBERGH

Times Wide World

Lindbergh preparing to hop off for Paris in his Valsparred Ryan plane.

P. & A. Photos

Our unofficial Ambassador to France about to pay his respects to Mme. Nungesser.



Inter. Newsreel

Lindbergh lands at Croyden Airdrome where Londoners give him a tumultuous welcome.

All fly in Valsparred Planes—

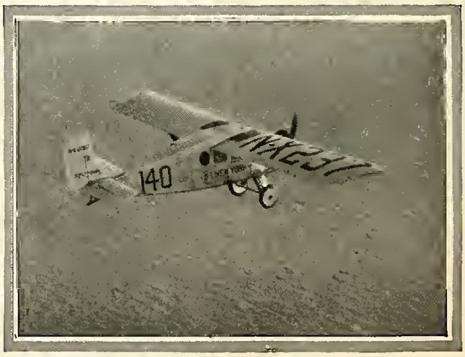
LINDBERGH, CHAMBERLIN, BYRD

ON the wings of the wind they flew—through storm and fog, over a wilderness of sea—to magnificent new achievements.

Others may duplicate their feats, but none can dim the renown these pioneers of the air have won.

That Valspar and Nitro-Valspar were chosen for finishing all three planes is not a mere coincidence; it is a verdict.

VALENTINE'S
VALSPAR
The Varnish That Won't Turn White



Chamberlin and Levine in their Valsparred Bellanca monoplane winging toward Germany.

P. & A. Photo

Byrd's giant Fokker was Valsparred from stem to stern wherever varnish was needed.

Times Wide World

AERO DIGEST
THE MAGAZINE OF THE AIR
Vol. 11 No. 1 JULY, 1927

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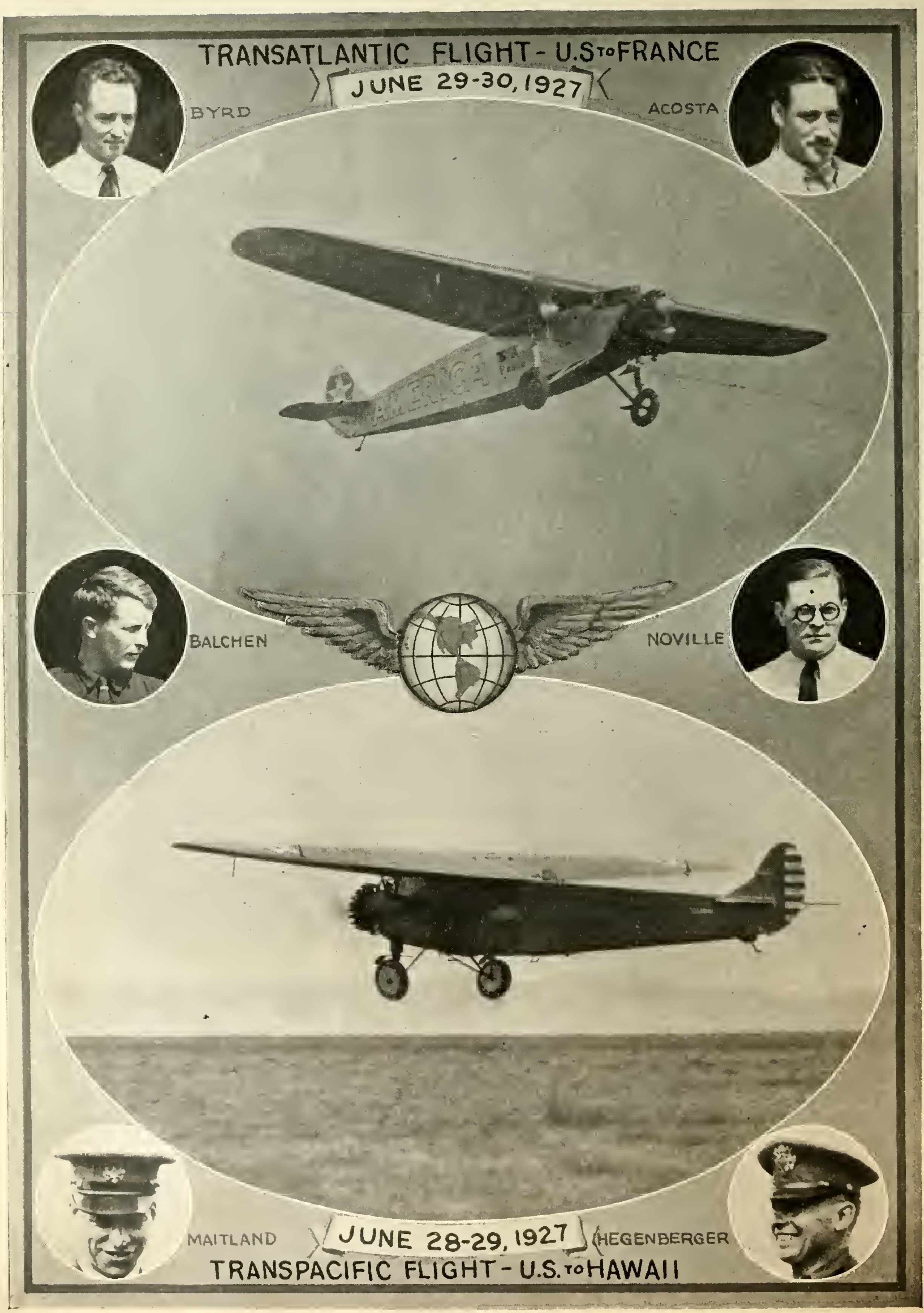

TRANSATLANTIC FLIGHT - U.S. TO FRANCE

JUNE 29-30, 1927

JUNE 28-29, 1927

TRANSPACIFIC FLIGHT - U.S. TO HAWAII

THE "AMERICA'S" FLIGHT TO FRANCE

AFTER weeks of readiness and watchful waiting for favorable weather conditions, the *America*, the America Trans-Oceanic Company's tri-motored Fokker monoplane, took off from Roosevelt Field, Long Island, N. Y., at 5:24 a. m. Eastern Standard time, on June 29th.

A drizzling rain had fallen a short time previous to the take-off, but this had no effect on the enthusiasm of the crowd. The first airliner, with air mail and four men in the cabins, took the air with the heaviest load any plane has ever attempted to carry. The take-off was perfect. Counting the weight of the crew, supplies and equipment, the total load was 17,261 pounds, nearly nine tons, including 1,295 gallons of gasoline and 54 gallons of oil.

Besides Commander Richard E. Byrd, in charge of the expedition, there were on board, Lieutenant George O. Noville, engineer and radio operator, Lieutenant Bert Acosta, slated to do most of the piloting, and Lieutenant Bernt Balchen, utility pilot, navigator and engineer.

T. Harold "Doc" Kincaid, Wright motor expert, arrived at the field soon after 3 a. m. and made a final inspection of the three engines. At a little past five o'clock, they were turned over and allowed to run a bit to warm them up.

When the signal came that everything was in readiness, a member of the ground crew slashed the rope that held the plane on the thirty-foot incline, where it had been tethered for days, and it rolled down the runway.

The plane was slow in getting up speed. After taxiing for 3,268 feet, 48 seconds after the rope was cut, the wheels left the ground. Acosta kept the plane leveled off until he gathered speed and then sent it up slowly. When it disappeared into the haze towards the west it was nearly 800 feet in the air.

Having taken off from the east, the plane had to circle around before setting her course for Paris, and in about ten minutes she again came over the field, this time pointed west, escorted by nine planes from Curtiss and Mitchel fields. The *America* was flying at an altitude of about 1,000 feet and making a speed of 85 miles an hour.

The plane was equipped with an automatic radio transmitting apparatus and a modified standard Navy type transmitter, so that for the first time it was possible for a transatlantic airplane to keep in touch with land and to issue bulletins.

At 5:50 a. m. radio instruments caught the first message from the plane: "Everything going fine—Noville." Its call letters were WTW.

Watch Hill, R. I., sighted the ship at 6:26 a. m., flying fast at a moderate height. Plymouth, Mass., reported seeing the *America* at 7:15 a. m.

At 8:41 a. m. the plane radioed that the extra cans of gasoline were causing compass variation. Difficulty with fog banks was encountered soon afterwards, over Nova Scotia. At 11:35 a. m., six hours and eleven minutes out of New York, the *America* was above Bedford, Nova Scotia, approximately 530 miles on its way, and still having trouble with fog. At 5:12 p. m., the following message was received: "Crew in good condition. Headwinds are bothering us. Cape Race is the last station we will raise on this coast. Regards to all the hangar crew—Byrd."

The position of the airliner at 9:30 p. m. was 200 miles east of St. Johns, Newfoundland, where it was sighted by a steamer. At 2:30 a. m. on Thursday a radio message relayed from Chatham, Mass., said: "We have seen neither land nor water since 4 p. m. yesterday on account of dense fog and low clouds covering an enormous area—Byrd." A previous message had reported that he could scarcely see the tips of the wings and that it was impossible to navigate. At 7:00 a. m. the plane reported its position to be 620 miles from the tip of Ireland and a little later said that it was flying at 10,000 feet in a dense, freezing fog.

From then on numerous messages were received at various points, many of them conflicting but it became definitely known on July 1st that at 2:30 a. m., French time, 10:30, Eastern Daylight Saving time, that Commander Byrd was forced to make a landing at Ver-Sur-Mer, a town on the coast of France not far from Caen and about 125 miles from Paris.

The plane, almost out of gasoline and oil and groping blindly through fog and rain, descended in the sea not far from the shore at Ver-Sur-Mer, after 4,200 miles of traveling. The airline distance flown was 3,477 miles. The log of the *America*, the sack of mail, charts and records of the flight, and bits of the Betsy Ross flag, which they were bringing from Rodman Wanamaker to President Doumergue of France, were saved but the wings and other portions of the plane including the landing gear were badly damaged.

The flyers were received by the mayor of the little seaside resort and were extended the hospitality of two of the homes of the village—that of the Mayor and of the Municipal Councellor. Congratulations were received from Premier Poincaré, and Hamilton Wiley, the American Consul at Cherbourg, arrived to offer aid.

Commander Byrd is quoted as having said that the trip was a harder flight than the one to the North Pole.

The flight demonstrated the great value of radio for such voyages.

New records in long-distance airplane radio communication were established. The transmitter on the *America*, operating on 690 meters or 435 kilocycles, established a 1,000-mile daylight range in commu-

(*Con't on p.* 111)

© *Underwood & Underwood.*

The "America" on the runway at Roosevelt Field before the take-off.

OUR TRANSATLANTIC FLIGHT

By
Commander Richard E. Byrd, U. S. N.

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IT was raining just before we took off and it was thick and drizzly from the time we left until about 8:30. For the first few hours we got as much altitude as we could for safety and gave more attention to the safety factor than to speed.

Right near the start we feared we would have to dump half our gasoline and turn back, but, luckily, just at the critical moment, our ship lifted and Lieutenant Noville, who was all set to empty one gasoline tank at least, held his hand.

We had fairly clear weather until we reached Newfoundland, though at times it was quite rough, especially going over Nova Scotia. We kept a sharp lookout all along the route for Nungesser and Coli. We always had been anxious to search for them and thought there was a slight chance that they might have landed in some rugged place in Newfoundland or Nova Scotia and cracked up their machine.

On the way to Newfoundland we had a splendid opportunity to get some excellent data on the altitude at which to fly in order to get the most help from the wind. In other words, to pick out the shortest air route. If the best advantage is taken of the winds the route can be shortened about 800 miles, and we were anxious that our flight should do something toward contributing to this improvement.

The most difficult thing about these long flights is suspending the great loads in the air. We soon got up to 3,000 feet, which, in my opinion, is a remarkable demonstration, considering the heavy load aboard.

Of course, we could have taken considerably more gas if we had left the radio out, taken only two men and not taken three or four hundred pounds of emergency equipment, mail, food, medical supplies, etc. We deliberately sacrificed the cruising radius in an effort to provide for every emergency, just as transatlantic commercial airplanes of the future always will be required to provide for.

Acme.
Commander Richard E. Byrd.

We paid as much attention as possible to procuring the strongest wind and the most favorable wind as far as direction was concerned.

We found that the winds increased in strength with the altitude up to about 1,500 feet and then did not increase much with the altitude until around 3,000 feet. From that altitude, up as high as we flew, the winds seemed to increase in strength, but the direction of the wind had been taken into consideration as well as its strength, because at sea westerly winds change their direction clockwise about fifteen degrees from the surface of the sea up to about 1,200 feet.

Of course, a wind directly behind the plane might assist it more than a stronger wind with twenty degrees angle to the course. Changes in the direction of the wind with changes in altitude are more pronounced over land, it is believed, than over the water.

The very vital importance of this matter to transatlantic flyers is demonstrated by the fact that on several occasions when we had surface winds from an easterly direction, and therefore against us, we were able to ascend to an altitude above 3,000 feet and thereby get winds which were favorable to us.

This might well make a difference in the speed of the plane of as much as twenty miles an hour. An air navigator, using his drift indicator, can estimate his speed over ground or water and the angle at which the wind is drifting him and in this way succeed in flying at an altitude that would give him the greatest speed.

If the air were still, the navigator could always tell what speed and direction he was making, even in a fog, but unfortunately this condition practically never exists over the ocean. The transatlantic flyer of the future will not have to wait for storms to clear, but it will be essential for him to know where the centres of these storms are. In this way he can actually get considerable assistance in a storm.

For example, the wind of the storm area in the North Atlantic travels counter-clockwise around the storm centre, and if the navigator flies along the southern side of this disturbance he will get considerable assistance from the wind, especially if he will fly at that latitude which will give him the maximum wind, but if he flies north of the disturbance he will have the winds against him. In the case of a high-pressure or good weather area, the winds travel clockwise in the North Atlantic, and it is, therefore, advantageous to fly on the northern side of the centre of the high-pressure area.

On the other hand, if it were impossible for a pilot to fly on the northern side of this area, he would, as a general rule, find, I think, at a certain altitude say, around 15,000 feet, that the surface winds had shifted to a certain degree toward the west and that instead of having the winds bucking him he would have them with him.

Before me on my chart board on the plane I kept the weather map that Kimball had brought to me just before leaving in the early hours of the morning. It indicated that if we should fly fairly high for some hundreds of miles after leaving Newfoundland, we would probably have good winds with us, that these winds might blow us a little to the south and then a little to the north of the course, that then we would get into a high-pressure area with a higher barometer and that around 10,000 feet in this area we would have the winds with us, blowing the plane, generally speaking, a little off our course to the south.

Following this theory, we kept at a high altitude. There was another advantage here because it frequently took us out of the fog and clouds, but frequently we ran into huge clouds that we could not get over, which was not pleasant, for the whole cloud mass was cold and the temperature at the time not far from the dangerous freezing point where the water that drenches the plane is likely to form into ice.

At times we were helped by the wind as much as thirty miles an hour in spite of the big load of personnel and equipment we were carrying, and in spite of the fact that a three-engine plane has a shorter cruising radius than a one-engine plane, due to the power unit in the one-engine plane being more compact and giving less resistance per unit of horsepower.

Field men who prepared the "America" for flight.

Left to right: E. J. Demas, T. Harold "Doc" Kincaid, M. P. Sorensen, Ross Gardiner, and T. Mulroy.

Above the clouds there were at times some terrible views. We would look hundreds of feet into fog valleys—dark, ominous paths.

At times the cloud peaks on the horizon looked exactly like a land of mountains. At other times they took on the appearance of a beautiful lake or river which showed blue against the gray of the clouds around.

Once when we were flying at an altitude of about 10,000 feet water was dripping into our cabin from the extremely dense fog. We got a radio message from the steamer *Ulgaland,* which told us that our signals were coming so strong that we must be very near them and asked if we could see them. They said they too were covered with fog. They gave us a radio bearing and soon after that we got a message from the steamer *Paris,* which also said that our radio was so strong that we must be near them. They gave us a bearing that verified our calculations and told us the clouds were so low and the wind from the west. This last information was very encouraging.

When finally we saw water, it was indeed a most pleasant sight. It was still cloudy, but we could get glimpses of the sun through the clouds. We checked the drift and speed very carefully from then on until we struck land. We did not sight any ships until we got quite near land; then we passed a large number of them.

We were naturally delighted when we sighted Cape Finisterre. Then we began receiving radio messages from all directions. It seemed as if the whole of Europe was trying to get in touch with us.

I set a course for Paris and checked very carefully on the cities and points of land we should see.

Soon it began to get dark and the weather so rainy and thick at times that we could not check on the lighted cities below us. I was not apprenhensive about hitting our objective, because we had done pretty well with our compasses over 3,000 miles and I saw no reason why we should not steer accurately the remaining 300 miles.

We saw some bright beacons ahead at about the time we should be at Paris, when I was so confident that we were there that I wrote a radio message for Noville to send reporting to Mr. Wanamaker that Paris was in sight. But when we reached the bright lights we found, to our great astonishment, that we had come to some amusement resort located near the water's edge.

Our compasses had taken us in a circle instead of in a straight line; but it was difficult to tell whether the circle was to the right or the left and impossible to know its diameter. So we found ourselves in a most disconcerting predicament, not knowing our position with certainty, our gas giving out before morning and unable to see land beneath us, as it was a very dark night and the weather was thick.

I judge that we had circled left, and I more or less guessed our position and set another course for Paris. This was a very critical time indeed, because, if after flying several hours and missing Paris, we might have a forced landing on our return and not only smash the plane to pieces but run a big chance of injuring some one beneath us.

It is certain that our compass went bad when we aimed for Paris the first time, and Balchen afterward checked with me that something seemed wrong with the compass during that time.

But when I set the second course, I checked both compasses together and found they were O.K. I do not believe there was anything wrong with the compass—it was some local affection, probably from some magnetic material that had been moved in the ship.

We continued our course until we thought we could be at Paris, but the weather was so thick that I believe that if we had been very close to the beacon at Le Bourget we could not have seen it.

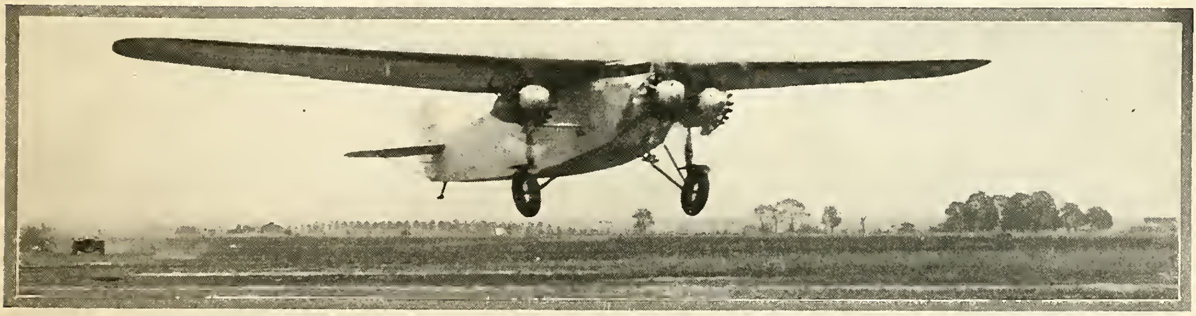
We have been told that our engines were heard there with a sound intensifier, but I am not able to corroborate that statement.

We reached the point where, if we went on any further and missed Paris, we would be likely to have a forced landing before our return to water. It would be utterly impossible to land on unknown land without smashing everything to pieces.

We knew that in one hour, or perhaps half an hour, we could go no further because our gasoline supply would be exhausted. We therefore determined to head for water and land there the best way we could. That we would not be able to see water very clearly we knew, and I do not believe I ever heard of anybody landing on a pitch dark night on water without a light. But, at any rate, it was our only hope.

I want to pause here again and mention my shipmates. Here they were faced with a situation where the chances of survival were small, yet they continued to function efficiently.

(*Continued on next page*)



Underwood & Underwood.

The "America" takes off easily with her record load of 17,261 pounds, nearly nine tons.

Maholo!
Félicitations!
Congratulations!

to

Lieutenants Maitland and Hegenberger for their trail blazing flight across the Pacific and to Commander Byrd and the Crew of the "America" for their flight to France.

We feel proud that our castings were used both in the airplane and the engines that made these wonderful flights.

Magnalite castings were used also in the following historic flights:

Round the World
South America Good Will
Lindbergh
and
Chamberlin

We have been furnishing heat treated MAGNALITE aluminum alloy castings to the automotive industry for over 23 years and to the aircraft industry since its beginning.

We are equipped to furnish castings for aircraft purposes which meet Government specifications.

Chas. L. Lawrance now president of the Wright Aeronautical Corporation wrote to us as follows:

Feb. 20, 1919.

"It gives us great pleasure to tell you what excellent results we have had with Magnalite. We have used pistons of this metal for a number of years on various motors, and have found that it had every quality necessary for a good piston, having the proper degree of hardness and a very dense structure without any porosity whatever.

"So far as our experience goes, it is the best metal for pistons which we have ever used."

LAWRANCE AERO ENGINE CO.
(Signed) *Charles L. Lawrance*

Walker M. Levett Co.
The Pioneer Aluminum Alloy Piston Manufacturer
415-421 E. 23d St., New York, N.Y.

At the same time that I admired them beyond words, I felt that the entire responsibility was mine—that it was I who had invited them to make this flight with me and that missing Paris was my fault.

The strain was prolonged and one had lots of time to think things over. To make matters worse, the weather still was squally and nasty. We began to make preparations for the end and put some of our scientific data in places where we thought there would be the least chance of their being injured by water.

I set our course to take us back to the amusement resort we had seen, because at least there was some light there. We came out of the fog and saw it several times from above. We circled slowly around and attempted to find some landing place near, but there was none.

The only other thing we could see was some revolving light some distance away. We made for it, hoping that the flashes of this light would enable us to see the water sufficiently to judge our distance above it when we came down. But when we got there we found that the beams of light traveled so rapidly over the water that they were of no use to us.

We had brought with us for navigation purposes some bombs which would ignite on striking water and give light for a few minutes. Our gas was getting low and we decided to try a landing. Balchen was at the wheel.

We came down as slowly as possible without losing flying speed and falling into the water. The wheels touched first and were shorn off the fuselage. A second or two afterwards there was a smash and the whole plane instantly filled with water.

At 2:30 in the morning of July 1st, in the pitch dark, with rain pouring and the clouds so low there was no possibility of seeing anything, our transatlantic flight ended in the sea, 200 yards from shore, near the village of Ver-sur-Mer, France.

We landed voluntarily, choosing the sea as safer than unknown ground, and then swam and paddled that 200 yards to shore, while our plane filled and partially sank.

Noville says that he saw me shot out of the window out of which I was looking to try to judge the distance above the water. I found myself swimming around and swam back to the window and heard Noville calling for me.

I yelled to him, but was not sure he heard me. But I could dimly see him getting out of the window on the other side. He afterward told me that forty-two hours of roaring engines had deafened him so that when I called him he could barely hear my voice.

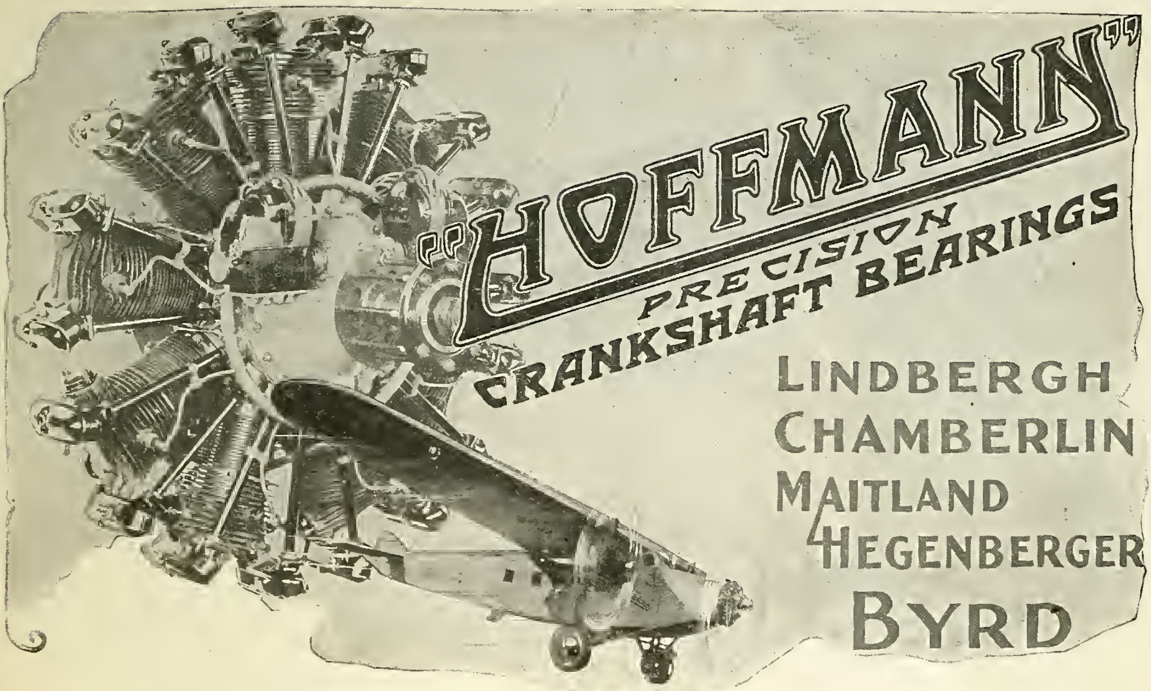
Seeing that he was safe, I swam forward to the cockpit. Reaching in for Balchen, I found him extricating himself in a dazed condition. He also was deaf, which I did not realize at the time.

I yelled at the top of my voice for Acosta, but got no answer. I thought he was pinned somewhere under the water. We looked in the cabin, but could not see him and thought that he might have been thrown clear and stunned. We continued to yell for him and looked around, but could not find him.

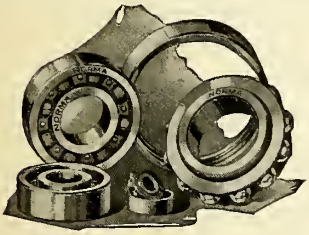
It was very dark. The plane was floating with a wing under the water, which meant that the whole of the fuselage was under water also. Presently Acosta appeared, and, believe me, I was the happiest man in the world.

Our emergency compartment with equipment for use in case of a forced landing at sea was placed where we thought there would be the least chance of its getting under water. Our calculation was right. The top of the compartment was clear.

(Continued on page 28)



THE compelling reasons which dictated the choice of Hoffmann Roller Bearings for crankshaft service on record-making flights should inspire fliers everywhere to specify bearings, as well as motors, of the same reliability.



And, where dependability is just as essential, but the loads more moderate and steady, (as with the Pioneer Earth Inductor Compass) engineers specify

"NORMA"
PRECISION
BALL BEARINGS

In both open and closed types, in the range of sizes leading up logically to the heavier duty for which "HOFFMANNS" are so well adapted.

Catalogs on request.

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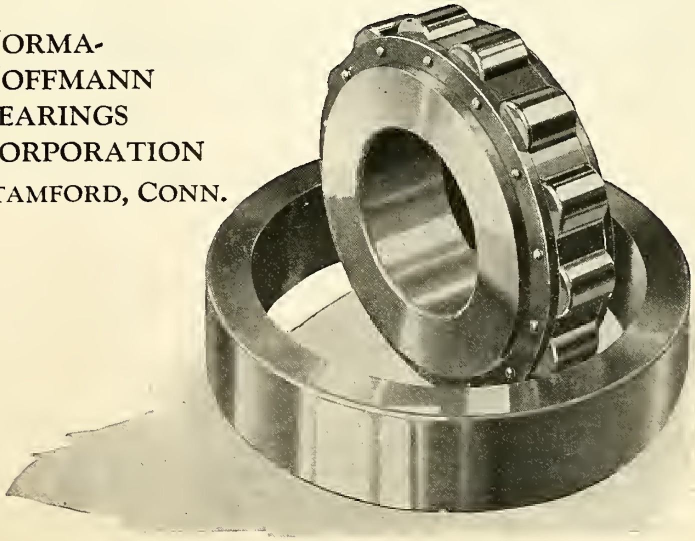

(Continued from page 10)

Noville riped it open and was soon getting our rubber boat while we were engaged forward. With some difficulty we climbed on top of the wings and started pumping air into the boat. As everyone was stiff and bruised, this was not an easy thing to do.

The great tank, which was now empty of gas, was holding the plane up, and that both pleased and helped us. We landed when the tide was high, and I believe we were in not more than ten or fifteen feet of water.

With grunts and goans, we embarked in our rubber boat and rowed ashore. We carried the boat up the beach and headed for the nearest light, which seemed to be about a mile away.

When we reached the little village, we found it was not easy to rouse the inhabitants. The houses had fences around them and the gates were locked. We jangled the doorbells, but to no avail.

Finally we went to the lighthouse and found the lighthouse keeper and his wife awake. I think they first thought we were questionable characters—we certainly looked it, wet and bedraggled.

But when they found we had landed from America there was great excitement and from then on we received the kindest, most courteous and hospitable attention possible from the people of the village, which happened to be Ver-sur-Mer.

As long as I live, I shall never forget them, and as I thanked my host on leaving he said that not only had he done this for me but had done it for affection for America. The plane was partly wrecked and its fuselage badly damaged, but I think we will be able to mend her up again. The French Air Service and the marine authorities, who are taking care of the plane, have been very kind and very skillful.

We flew for more than forty hours, and through nineteen consecutive hours we never saw land, sea nor ship.

One thing stands out about the flight and that is the behavior of our motors. They worked perfectly all the time and never once showed the slightest error or failure.

Our radio proved its value, for it showed it is practicable to keep more or less in touch with ships at sea and thus help keep on the course. There is no doubt that radio will play a great part in the future of transatlantic navigation of the air.

Science has not yet developed any instrument that will enable an air navigator to locate himself in a fog except by radio bearings. The ship or station that gives this bearing first gives its position in latitude and longitude. This is plotted on a chart. Then the direction of the airplane is given from this position and a line is drawn in that direction from the ship station.

At the time the radio bearing was taken the plane would be somewhere on the line, but another bearing would be needed to get another line, and where the two lines crossed would be the position of the airplane.

It seems that undoubtedly the transatlantic fields of the future will have in the vicinity several radio direction-finding stations, so that if a plane arrives in foggy weather it will be able to locate itself by these radio bearings.

I think that perhaps our effort to keep away from freezing weather might have had to do with our getting further south than we should have. Once ice formed on the motors and we were, of course, worried about the effect the ice might have on our propellers.

When we landed we had enough fuel to have gone only thirty more miles.

CONGRATULATIONS
Lieut. Maitland—Comm. Byrd

WE are proud to know it has been our good fortune through supplying some of the materials used in the construction of both these Fokker planes built by the Atlantic Aircraft Co. to have assisted, even in a small way, in making these flights successful.

Upholstering Fabrics; Welts; Bindings and Gimps; Cotton and Jute Webbings; Aluminum Mouldings; Felt Lined Aluminum Channels; Locking and Plain Door-Handles and Locks; Dome Lights; Nails; Tacks; Lacing Hooks and Eyelets; Curtain and Snap Fasteners; Yoke and Rod Ends, etc.

Large catalogue Ready 60 Days

BARKER & STELTER, Inc.
Established 1848
252 Greenwich St. New York

WE congratulate Lieutenant Maitland, Commander Byrd and their gallant crews on their wonderful flights over the Pacific and Atlantic oceans.

Egyptian Fibre because of its high dielectric properties, great resistance to shock and wear, and lightness, is chosen by the Atlantic Aircraft Corporation for use on all its planes.

Samples and further information upon request

DELAWARE HARD FIBRE COMPANY
Wilmington, Delaware
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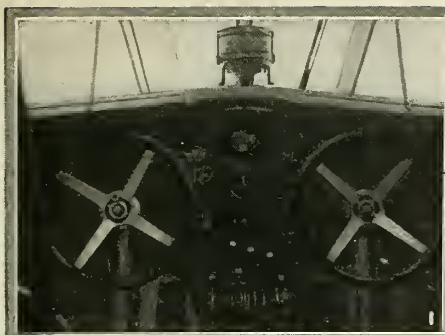
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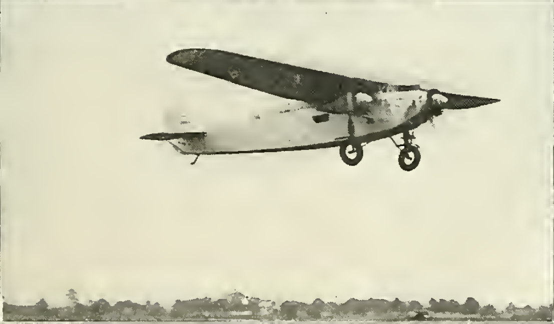

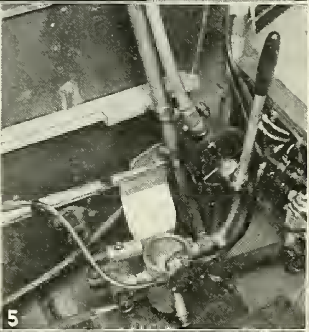
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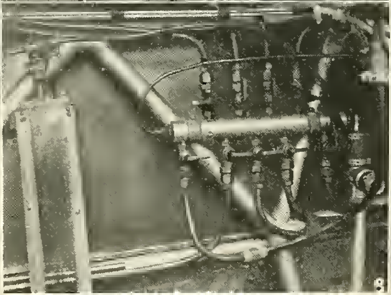
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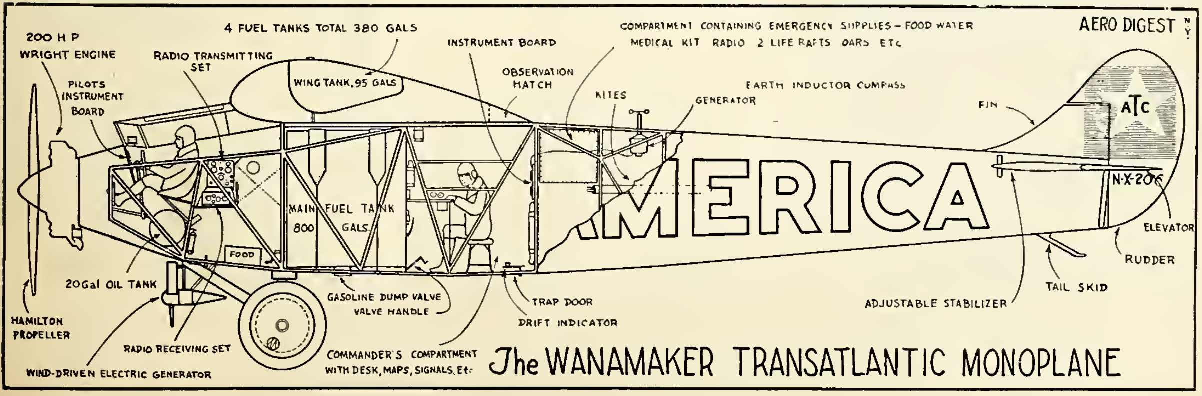
11

1—Pilots' controls and instrument board details.
2—The instrument panel in Commander's cabin.
4—Gasoline gauges and emergency dump valve.
6—The forward hatch for entering the pilots' cabin.
9—Starting the starboard engine with a hand crank.

SOME DETAILS OF COMMANDER BYRD'S TRANSATLANTIC AIRPLANE "AMERICA"

7—Above the wing, showing pilots' cabin roof doors.
10—Nose of the plane, Noville in the pilot's seat.

3—In the rear cabin—showing Commander's desk, right hand window, instruments, maps, etc.
5—Hand-operated fuel pump, valve and strainer.
8—Fuel system control cocks in the forward cabin.
11—Detail of port engine nacelle below the wing.



The WANAMAKER TRANSATLANTIC MONOPLANE

THE CREW OF THE "AMERICA"

Acme.

Commander Richard Evelyn Byrd.

COMMANDER RICHARD EVELYN BYRD was born in Winchester, Va., the son of Richard Evelyn Byrd, a prominent Virginia attorney, and Elinor Bolling Flood Byrd.

He is a naval aviation officer on leave. Since boyhood he has lived a life of adventure and exploration. He traveled around the world all alone when he was 12 years old, later went through the Naval Academy, served a tour at sea, learned to fly and last year soared over the North Pole in an airplane.

His navy record includes seventeen citations, four for bravery. During his sea duty he saved two men, one a Captain, from drowning. In tight places, whether in the air or on sea or dry land, he is known as a man of the most reckless bravery. He is quiet, modest, unassuming and is a thorough sportsman. In addition he has highly developed qualities of leadership.

Acme.

Lieutenant Bertram B. Acosta.

LIEUTENANT GEORGE O. NOVILLE, assistant pilot and flight engineer of the *America,* has long been a friend of Commander Byrd's, a fellow officer and a naval pilot of considerable note.

He was born in Cleveland, April 24, 1890, and is a graduate of the Central High School of that city. After his graduation, he enlisted in the navy as an apprentice—it was then 1906— and ten years later he was sent to Columbia University to take a course in aeronautical engineering.

Upon the completion of his course, Noville was commissioned in the naval air force.

In 1917, shortly after the entrance of the United States into the war, he was assigned to the naval air forces stationed at the Italian front, operating chiefly from Porto Corsini. This was the base which waged an offensive against the Austrian naval base. In recognition of his ability the Italian Government decorated him with the Croce de Guerra for distinguished services.

In 1920 he secured leave of absence from the navy and became superintendent of the United States air mail.

He was responsible for arrangements made in Labrador for the army's round-the-world flight, having been placed in command in that sector.

BERTRAM B. (BERT) ACOSTA is one of the few remaining pioneers in American aviation. He is one of the best-known pilots in America and has a preeminent reputation for fearlessness and accomplishment.

On April 14, 1927, with Clarence D. Chamberlin as co-pilot, he flew the Bellanca monoplane Columbia, the same in which Chamberlin and Levine later flew to Germany, for a world's duration record of continuous flying, having remained in the air 51 hours, 11 minutes and 25 seconds.

He won the Pulitzer Trophy in 1921 in a Curtiss Navy racer. He holds the endurance and distance record from Omaha to Philadelphia, 1,220 miles, which he covered in 11 hours, 20 minutes. At one time he held the American altitude record without oxygen, of 22,500 feet, made at Dayton, Ohio.

Acosta was born Jan. 1, 1895, at San Diego, Cal., of Spanish parentage. After attending public schools there he entered Throop Polytechnic Academy at Passadena, where he remained three years. In 1910, at fifteen, he began teaching himself to fly. Three years later he went to Canada and became chief instructor of the Canadian Air Station at Toronto.

In 1917 Acosta became director of flying and testing for the United States Army under Col. E. J. Hall and Col. J. G. Vincent at Buffalo and later at Dayton. A year later he was commissioned Captain in the air service, resigning in 1922 to accept a commission as Lientenant in the navy. He held that rank until 1926.

Aldens.

Lieutenant George O. Noville.

BERNT BALCHEN, the fourth member of the expedition, was born in Treit Topdal, Norway.

Balchen attended the Norwegian Forest Academy and then enlisted as a private in the army. After a year's service he was sent to the Naval Academy Flying School, from which he was graduated as a lieutenant in 1921.

After achieving some reputation as a naval flyer he entered the Norwegian air mail service.

Balchen was with Amundsen in Greenland and Spitzbergen. In Spitzbergen, where Commander Byrd and Floyd Bennett were grooming the Josephine Ford for her hop across the North Pole, Balchen met Byrd and returned with him to the United States in order to qualify for this expedition, which is all-American. Balchen resigned from the Norwegian navy and took out first citizenship papers recently.

Acme.

Lieutenant Bernt Balchen.

You usually find HASKELITE in unusual flights

THE Hawaiian flight and Byrd's hop to France were both made in Fokker planes using HASKELITE plywood. Running back through recent air triumphs, practically every one was made by a HASKELITE equipped ship. There is Lindbergh's Ryan plane, "The Spirit of St. Louis"; the Loening Good Will planes; the Douglas World Cruisers; the Curtiss NC4, etc.

Unusual? Yes, perhaps. But not so unusual, after all, when it is remembered that over 90% of the aircraft plywood used is HASKELITE. It is the only material meeting the strict Navy Grade A specifications for waterproof plywood.

Haskelite Manufacturing Corporation

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PLYWOOD
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A.D.-7-Gray

THE ARMY FLIGHT TO HAWAII

ANOTHER ocean has been conquered!

Lieutenants Lester J. Maitland and Albert F. Hegenberger, of the United States Army Air Corps, have succeeded in making the first non-stop flight over the Pacific Ocean from the mainland of the United States to Hawaii.

The Army *Bird of Paradise*—a Fokker monoplane with three Wright Whirlwind motors—piloted by Lieutenant Maitland and with Lieutenant Hegenberger as navigator, hopped off from Oakland Municipal Airport at 7:09½ a. m., Pacific time, on June 28th.

The plane was flown to Oakland on the 27th from Crissy Field, where it was inspected on the 26th, following its arrival from San Diego on the 25th. A camp was established upon arrival of two truckloads of equipment and men, and late in the afternoon army officers instructed the airport officials to give them a "clear field" at 7 o'clock the following morning.

The runway, extending 7,020 feet east and west, at the head of which the plane was stationed, had previously been inspected by army men and pronounced perfect for the take-off of the six-ton plane.

At sundown, the day before the flight, gasoline trucks were run alongside of the plane and the five-hour fueling process began. During this stage the three motors of the plane were wrapped in their coverings; they were ready, nothing more could be done to them. No work was necessary in either the pilot's or navigator's cabin—everything was ready there. The fueling completed, the army men departed, leaving only a guard about the plane.

At 6:30 a. m., June 28th, the non-commissioned officer at Crissy Field, who was detailed to provision the plane, arrived with his small detail. He stored aboard the quart bottle of soup, a like amount of chocolate and hardtack and five gallons of water. At 6:45 a. m. Lieutenants Maitland and Hegenberger and other army officers arrived from their night's resting place in Oakland. From Crissy Field arrived several army service planes. They stationed themselves far down the runway for a quick hop-off as escorts. At 7 a. m., the time specified twelve hours before, the three motors of the plane were started for a short warm-up. There was no last minute frantic rush to correct small details, nothing was forgotten and there was but little visible excitement among the army people. To them this was but another duty of the army.

The flyers climbed into the machine, closed the doors of the pilot's and navigator's cabins, gave the plane "the gun" and at 7:09½ a. m. they left for Honolulu, just 19 minutes after they arrived at the field.

Just before they climbed into the plane, Major General Patrick, Chief of the Air Corps, who had personally inspected and passed upon the plane the day before, shook the flyers' hands saying: "God bless you, my boys, I know you'll make it."

The take-off with their load of 13,500 pounds, including 1,040 gallons of gasoline, was perfect; and so quickly did the plane speed away that it was difficult to realize how heavily it was laden.

At a height of 2,000 feet and traveling at 100 miles per hour, the plane passed over the Golden Gate, leaving the army escort planes far behind.

During the first 500 miles, they ran into heavy crosswinds, but after that a strong tail wind aided them. Generally unfavorable weather prevailed throughout the flight.

They flew at a height of 300 feet above the sea during the daylight, climbing to about 10,000 feet at night in order to facilitate celestial observation.

While they may not have been exactly on the course every minute of the time, they were not far from it. Their first check as to position was made with a steamer bound for San Francisco when they were about 775 miles out. Lieutenant Hegenberger said: "I remember that I wrote a note to Maitland telling him that we ought to sight a ship in about twenty-five minutes. And when we looked out after a while, we saw it."

"Right at the beginning each motor in turn caused us some anxiety, but they all straightened up finally," Lieutenant Maitland said.

The radio direction beacon was a success but due to their radio receiver going out of commission they were unable to make use of it part of the time. The signals, however, when the receiver was working, came in distinctly.

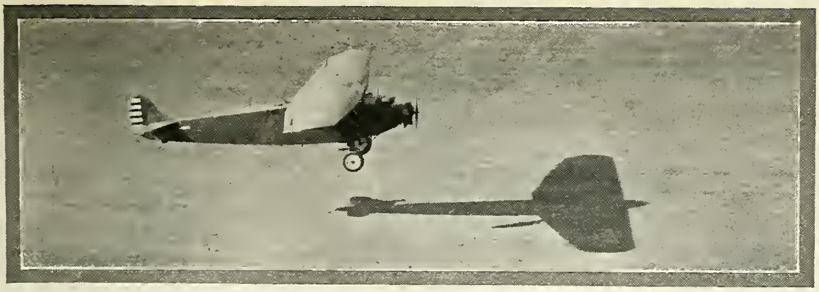
The radio beacons sending guiding waves are at San Francisco and Kahului, Maui, in Hawaii. In the middle of the Pacific, however, there is a 400-mile stretch where it is possible that neither beacon may be heard.

In addition to the radio direction beacon the earth inductor compass, dead reckoning and celestial observation were used for this most difficult problem of navigation.

No warships were on

P. & A. Photo.

Lieutenants Maitland and Hegenberger about to hop off for Hawaii.



P. & A. Photo.

The Army transport taking off at Oakland, California.

their path to aid them and only one vessel was sighted on the entire flight. The army plane flew at an altitude of about 200 feet over the liner *Sonoma* at 2:44 p. m., Pacific time, when they were 775 miles west of San Francisco. The *President Pierce,* 1,100 miles from California, reported hearing the plane's radio asking for a bearing to be sent to establish location.

After flying twenty-three hours, the flyers sighted the island of Kauai, northwest of Oahu. In two more hours and fifty minutes, after flying 2,407 miles over water—the longest flight ever made entirely over water—the *Bird of Paradise* landed at Wheeler Field, Honolulu, at 6:31 a. m., June 29th, (9:01 a. m., Pacific time, or 1:01 p. m., Eastern Daylight Saving time). Their total time in the air was 25 hours, 50 minutes. The fastest previous time made between San Francisco and the Hawaiian Islands by any means of conveyance was 75 hours, 40 minutes, and 40 seconds, by the light cruiser *Omaha* in 1923.

The squadron of airplanes which went out to welcome Maitland and Hegenberger failed to locate them in the early morning darkness and rain, and the crowd waiting to greet them was about to lose hope of their safe arrival, when suddenly, just as the rain ceased and the sun broke through the clouds, the army plane appeared from the opposite direction from which it was expected and came down on the rain-soaked field making a perfect landing.

Instead of flying over Honolulu, the flyers had followed the Kauai Channel and came in the "back way." The ship was fifty feet from the ground before the onlookers realized it had arrived.

More than 200 gallons of gas were left in the tanks—enough for an additional 800 miles of flying. An average speed of nearly 115 miles per hour was maintained throughout the flight.

P. & A. Photo.

Over the San Francisco water front headed for Hawaii.

Taxiing the entire length of the field the plane circled and came back in front of the reviewing stand, where army, navy and civil authorities were waiting to congratulate them. A tumultuous welcome from the Islanders, who had waited hours in the rain to greet them, followed.

The flyers were tired and hungry — they had had nothing to eat on the entire trip, being unable to find the food which was placed in the plane.

Garlanded with leis, they were greeted by Governor Wallace R. Farrington, Mayor Charles Arnold, Major General Edward M. Lewis, Commander of the Hawaiian Department of the Army; Col. Howard, Department Air Officer; Admiral John McDonald, A. W. Van Valkenburg, and other dignitaries, and then were taken to the home of Major H. P. Miller, commandant of Wheeler Field.

Lieutenant Maitland's first words to Governor Farrington were: "I certainly am glad to be here. My life dream has come true. The flight was a marvelous success. Althought we had bad weather part of the time, the ship behaved perfectly. We heard the radio beacons until last night when one of our receiving sets went out of commission."

President Coolidge cabled: "I am glad to extend to you on behalf of our people hearty congratulations upon your fine achievement. You have added a chapter to the brilliant history of American aviation, of which we are proud. Your success marks a further step in the art of flying, combining as it does the supreme skill of the pilot with the wonderful accuracy of the navigator, and furnishes a striking evidence of the efficiency of our air forces."

Commander Byrd received the news that Lieutenants Maitland and Hegenberger had arrived in Hawaii when flying over Newfoundland enroute to France. He immediately radioed to his station at Roosevelt Field to wire his congratulations to Maitland and crew.

The conquerors of the Pacific were immediately drawn into a whirl of official welcomes, receptions and celebrations.

The skill of Lieutenants Maitland and Hegenberger in reaching their destination so successfully and directly cannot be praised too much. If they had gotten off their course to any material degree they probably would have passed beyond the Hawaiian Islands and have had nothing before them but ocean and more ocean. They had to cover 2,407 miles of open sea and hit a land target only 317 miles long. In every navigation computation there are many chances of error which indicates how difficult it is to stay on a course.

The precision with which the army plane was prepared for its epochal flight and the regular schedule maintained by the pilot and navigator in their hop-off and progress across the Pacific was praised by civilians and army officers alike.

"Our pride lies as much in the business-like way in which the preparations were made, the perfectness of the technicians' plottings of the schedule for the plane, and the clocklike schedule of the flight as in the hop itself, its perfection of piloting and navigation," said Major Delos Emmons, Commandant of Crissy Field, San Francisco.

The Army flyers have distinguished themselves and the Army Air Corps in accomplishing this long-dreamed-of Pacific flight. They have brought the Hawaiian Islands within one day of the country's mainland. No prize money is theirs as the project was strictly an Army one and had no relationship to any prize offered for successful flights across the Pacific, but the flyers are proud of their valuable contribution to the development of aviation.

They were anxious to return to the mainland of the United States in their plane but they have been forbidden to do so by orders from Washington. They will sail from Honolulu on the liner *Maui,* sailing for San Francisco on July 6th, leaving their plane in Hawaii for inter-island flying.

The *Bird of Paradise* is the Army Air Corps transport C-2. It was prepared for this flight at the material division of the Army Air Corps, the seat of the Army's experimental and development work in aircraft.

The airplane is tri-motored; has "tapering wings," with a span of 71 feet 2¼ inches, and a chord decreasing from 12 feet 5½ inches at the fuselage to 7 feet 4 inches at the tip. The weight of the airplane empty is 5,909 pounds. Fully loaded with gas, oil and equipment the weight was 13,500 pounds, of which 6,240 pounds were gasoline. A total of 1,040 gallons of gasoline and 58 gallons of oil were carried. Part of the gasoline was carried in tanks located in the wings, and the rest in specially designed tanks in the fuselage. These extra tanks are equipped with dump valves so that in case of emergency either tank can be emptied.

The high speed of the airplane fully loaded is 115 miles per hour, with a cruising speed (part throttle) of 95 to 100 miles per hour. The gas consumption is about 12 gallons per hour per engine, giving a cruising radius of well over 2,500 miles.

© Underwood & Underwood.

Lieutenant Lester J. Maitland.

The pilot's cockpit is inclosed with glass windshields, which can be slid open if desired.

The forward part of the cabin carries the extra gasoline tanks, each equipped with a standpipe type of level gage. The rest of the cabin, a room 5 feet by 8 feet, is arranged with the necessary equipment and aids for the navigator.

To the left is the radio equipment, the standard Army SCR 134 set. The receiver is above and the transmitter is below the shelf on which are the head set and the transmitting key. To the right is another and larger shelf serving as a table at which the navigator can make his computations.

© Underwood & Underwood.

Lieutenant Albert F. Hegenberger.

A hole or trap door, closed by hookless fasteners, is provided in the roof of the cabin. Sextant observations and the determination of drift are made through it. The navigator stands on the table with his head and shoulders above the cabin, and can make his observations with his range of vision unimpeded by structural members of the airplane.

If it is desired to make sextant observations from within the cabin, special windows of optically flat glass are provided near the roof of the cabin.

The flight was not a "stunt," but a serious study of air navigation problems, hence the three distinct sets of navigation aids—drift meters and compasses for dead reckonings, the sextant for position determination, and the radio beacon for guidance by wireless.

No details were forgotten for the comfort and convenience of the flyers. Food, water, and emergency rations were stowed in containers. An airraft (a collapsible rubber boat which can be almost instantly inflated by a cylinder of compressed carbon dioxide) was carried; there was even a traveling message bag by which messages are exchanged between the pilot and navigator.

First Lieutenant Lester J. Maitland was born February 8, 1898, at Milwaukee, Wis. On April 19, 1917, he enlisted in the Aviation Section, Signal Corps.

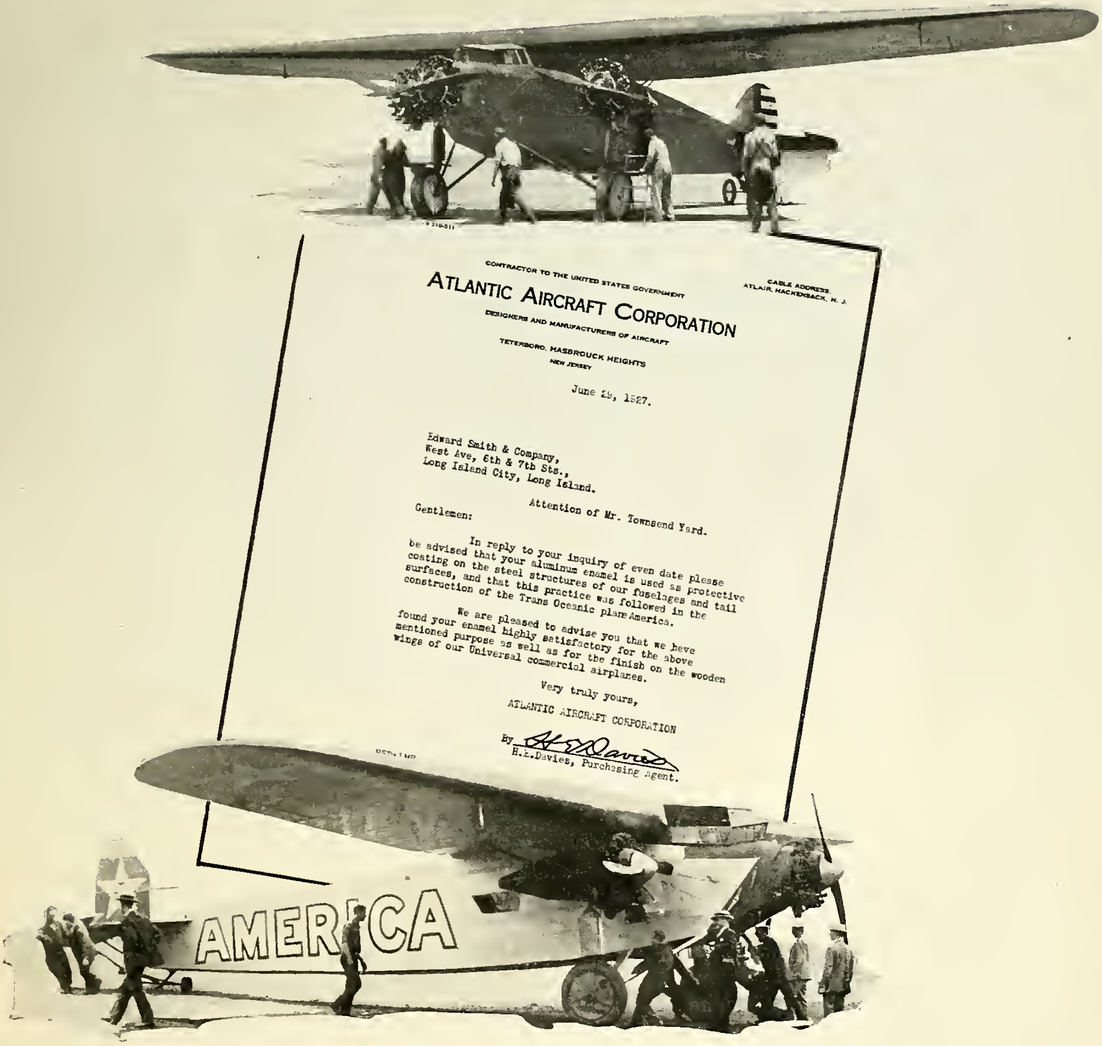
Piloting a Curtiss army racer in the Pulitzer trophy race, held at Mount Clemens, Mich., in the fall of 1922, he won second place. In March, 1923, in speed trials over a one-kilometer course at Wilbur Wright Field, Fairfield, Ohio, he broke all existing world's records for speed when he piloted an army Curtiss racer at 244.97 miles an hour.

Upon the appointment of F. Trubee Davison as Assistant Secretary of War Lieutenant Maitland was detailed to duty in his office as assistant executive.

First Lieutenant Albert F. Hegenberger was born in Boston, Mass., September 30, 1895.

On September 8, 1917, he enlisted in the Aviation Section, Signal Corps.

Upon completing a four months' engineering course at the Massachusetts Institute of Technology Lieutenant Hegenberger was assigned to duty in the Equipment Section of the Engineering Division at McCook Field, Dayton, Ohio. He was chief of the Instrument and Navigation Branch of the Engineering Division from July, 1919, to September, 1923, when he was ordered to duty in Hawaii.



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By H.E.Davies, Purchasing Agent.

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CHAMBERLIN'S FLIGHT TO GERMANY

Establishing a non-stop distance record of 3923 miles from Roosevelt Field, New York to Eisleben, Germany

P. & A. Photo.

Clarence D. Chamberlin

AFTER several reported leave-takings from Roosevelt Field, Long Island, New York, the Bellanca monoplane *Columbia,* piloted by Clarence D. Chamberlin actually made its aerial exit on June 4th, and before it again touched terra firma had crossed the Atlantic Ocean and established a new record for sustained flight—3,923 miles.

Chamberlin had as his passenger Charles A. Levine, owner of the plane, who sprang a surprise by climbing into the glass-enclosed cabin at the last minute. Their destination in Europe was not announced, but Chamberlin said that he would fly until every drop of gasoline on board was consumed.

Police arrangements were less efficient than when Lindbergh took off and it was difficult for Chamberlin to obtain a clear space to accomplish his take-off. At his request, two motor-cycle policemen started across the field, chasing the crowd before them. His motor well warmed, the Bellanca pilot started immediately in the wake of the officers, but he had gone only about a thousand feet when one of the officers got in his path and he was forced to bring the *Columbia* to an abrupt stop. However, he skillfully turned the plane about and taxied back to the starting point at the western end of the runway.

After giving the policemen a little more time to clear the way, Chamberlin again opened the throttle of his motor and the plane moved forward, actually leaving the ground within the first thousand feet. Chamberlin kept the ship on the runway until it began plunging up and down like a rocking horse.

Then the ship began to rise and the take-off was officially clocked at 6:05:27 o'clock, Eastern daylight saving time, which was two hours earlier than Lindbergh's take-off. Chamberlin got into the air in a thousand feet less than his predecessor and the *Columbia* carried a load 350 pounds (total weight, 5,500 pounds) heavier than that of the *Spirit of St. Louis.*

P. & A. Photo.

The "Columbia" taking off on June 4th for her non-stop distance record.

Weather conditions for the flight were ideal at the start of the flight. Before they reached the Nova Scotia coast they began to buck head winds and when they got there they were miles off their course and two and a half hours behind schedule in covering the first 600 miles. Soon after passing Halifax, however, a sixteen-knot wind got behind the *Columbia* and increased her speed to nearly a hundred miles an hour. At Yarmouth she was flying low and could readily be seen by watchers on the ground. Visability was so good that Chamberlin could see 50 to 100 miles.

Chamberlin's "running card," Eastern daylight saving time, was as follows, according to reports from various points along his route:

6:05 a. m.—The plane takes off.

8:00 a. m.—Sighted at North Westport, Massachusetts.

8:25 a. m.—Reported over the town of Long Pond, Massachusetts.

12:06 p. m.—Passed over Yarmouth, N. S.

1:10 p. m.—Passed over La Have Harbor, N. S.

1:30 p. m.—Approached Chedabucto Head, N. S.

1:55 p. m.—Passed over Shag Lodge Lighthouse.

3:00 p. m.—Passed over Wedge Island, N. S.

No fog was encountered off the Grand Banks, but after leaving the North American coast at Cape Race, the *Columbia* ran into storms, fog and clouds but had no great difficulty in continuing on its way. At 11:30 a. m., June 5th, the Bellanca monoplane met the *Mauretania,* 360 miles west of the Scilly Islands, and gave its passengers the thrill of a lifetime as it circled low over the ship. Chamberlin calmly surveyed the ship as he made a complete circuit of it, and then headed eastward at terrific speed. Within three minutes the plane was out of sight.

The *Mauretania* passed the *Memphis,* upon which Colonel Lindbergh was returning home, and radioed the battleship the news that the *Columbia* was tear-

FIRST LINDBERGH *Now* CHAMBERLIN!

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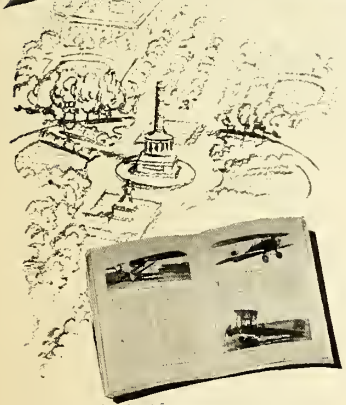


This booklet, Bulletin No. 17 V describes and shows the low cost of flying and includes descriptions and illustrations of nearly 30 airplanes of the most important American manufacturers powered with Wright Engines.

Many Wright Whirlwind Engine owners get 8 to 10 miles per gallon and use less than one quart of oil per 100 miles. Flying from 20,000 to 30,000 miles without overhaul or even cleaning carbon is a common occurrence. Whirlwind Engines are reliable for 125,000 to 150,000 miles of normal flying. Write for this Bulletin No. 17 V today.

THE recent Trans-Atlantic Flight Achievements of Lindbergh and Chamberlin prove again to the general public the actual safety and reliability of modern airplanes powered with Wright Whirlwind Engines.

With a record of over 1,750,000 miles in safety in 1926 in private and commercial flying, Wright Engines today stand preeminent in the aeronautical field.

The assurance of safety has been the only point which has deterred many persons from owning an airplane for pleasure or business. The past two year record of Wright Engines and especially designed Wright Engined planes, however, has finally removed any further uncertainty. To-day dependable pilots under government license are immediately available for regular employment to teach you to fly while piloting your plane.

Well proved planes from the designs of leading American manufacturers, powered with Wright Engines for every type of flying, including open sport planes, closed family and passenger planes, cargo planes, seaplanes, planes that take off from land or water, or big tri-motor airliners as comfortable as a yacht are available for your inspection and consideration at reasonable cost.

That's why More Pilots fly them!

Your plane is ready!

In the meantime write for the interesting non-technical Bulletin No. 17 V described elsewhere.

WRIGHT AERONAUTICAL CORPORATION • *Paterson, N. J., U. S. A.*

WRIGHT

P. & A. Photo.

The "Columbia" over the ocean enroute to Germany.

ing off another world's record.

Chamberlin flew a modification of the Great Circle route and first sighted land in England, whereas Lindbergh flew very near the Great Circle, and sighted Ireland first.

Late Sunday afternoon they passed over Land's End and Plymouth, England, en route to Germany.

At 11 p. m., Eastern daylight saving time, it was reported that the plane had passed over the airdrome at Dortmund, Germany, and that Chamberlin had dropped low and called out: "To Berlin! To Berlin!" The aviation police signalled the direction of the Teutonic capital, 260 miles away, and the plane rose again and pointed for its destination.

The ship's gasoline supply was rapidly becoming depleted so that at 05:35 hours, Mid-European time (12:35 a. m., Eastern daylight saving time) a forced landing, due to exhaustion of the gasoline supply, was made near Eisleben, about 110 miles southwest of Berlin and 3,923 miles from Roosevelt Field. Their elapsed non-stop flying time was 42½hours. The motor was functioning perfectly and, after refueling, the plane again took to the air in an attempt to reach Berlin. Becoming confused in the darkness Chamlin made another landing, this time at Klinge, a village near Kottbus, Germany, 70 miles southeast of Berlin. Thus, he actually traveled further than if he had gone to Berlin.

The ground was marshy and resulted in the propeller striking the ground and one of the blades was broken off, so that the fliers were compelled to delay their journey until a new propeller could be secured.

International.

Chamberlin and Levine at Kottbus, Germany.

The *Columbia* was located by one of the Lufthansa planes from the Tempelhofer Field, at Berlin, just as it was landing in the bog, where it dug its nose in the soft earth.

Police established a guard around the plane and the tired, but uninjured, fliers were taken to a modest hotel for food and rest. The Mayor of Kottbus welcomed the airmen officially and invited them to be the guests of the city.

The fliers reported that their worst air troubles began when they reached the Irish Sea and that they had to go higher and higher to avoid storms. Over Belgium and Holland much fog was encountered and at one time it looked as if they would have to land regardless of conditions below.

The populace of Kottbus massed itself in front of the hotel where Chamberlin and Levine stopped, and cheered vociferously from time to time for a sight of them. Intermittent showers seemed to have no dampening effect on the spirit of the crowd.

On the day after their arrival, the fliers were made honorary citizens of Kottbus at a special ceremony in the town hall.

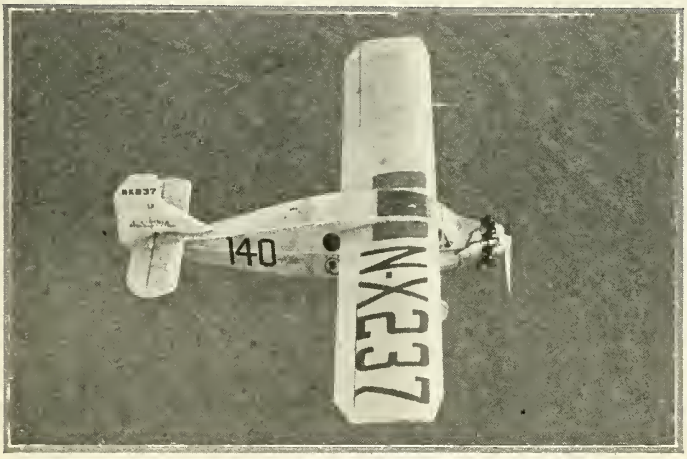
As soon as word of their mishap reached Berlin, the civilian Lufthansa organization offered to place its facilities at the disposal of the Americans, with transportation to the Templehofer airdrome by means of a large plane dispatched for the purpose to Kottbus. Chamberlin, however, felt that if it were at all possible, the trip should be completed in the *Columbia*. A propeller was at once shipped by air from Berlin and, in addition, two wheels, larger than those originally placed on the Bellanca, were supplied so that the take-off from the marshy soil would be facilitated. Mechanicians were sent to the scene to make such adjustments as were required and the *Columbia* was able to start once again for Berlin on June 7, the day after they came down at Kottbus.

When they arrived at the German capital they were warmly greeted by the President of Germany, Field Marshal von Hindenburg, who received them at the executive mansion. After congratulating the Americans upon their record-breaking feat, President von Hindenburg presented each of his visitors with a framed, autographed portrait of himself. He expressed the hope that the flight would aid in bringing the American and German peoples into closer communication. He also sent a message to President Coolidge.

Chamberlin and Levine were accompanied to the Presidential residence by the American Ambassador, Dr. Jacob Gould Schurman. Outside, in the Wilhelmstrasse, a tremendous crowd gave a rousing welcome to the aviators.

Chamberlin was of-

BELLANCA SPECIFIED DARTMOUTH-TEX



THE Bellanca Monoplane *Columbia* which was piloted by Clarence Chamberlin on the first flight from America to Germany is covered entirely with Dartmouth-Tex.

The *Columbia* is internationally famous for its excellence of design as proven by its performances in the 1926 Air Races where it won the efficiency race and more recently when it established the new world's endurance record of more than 51 hours. The covering on the *Columbia* is Dartmouth-Tex, grade A mercerized cotton. It is guaranteed to meet Government specifications, one of the reasons why it is widely used by America's best known builders of aircraft.

The surface tapes, pinks, (scallops), airplane cloth in convenient rolls, processed or unprocessed are available for immediate delivery. Write for samples and quotations.

NOTE – The Fokker Airplanes which crossed the Pacific and Commander Byrd's "America" are also covered with Dartmouth-Tex.

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116-118 Franklin Street New York City fered $100,000 to fly back to the United States, but it seems highly improbable that he will elect to make the attempt.

Throughout Berlin the Stars and Stripes were conspicuously displayed, often in company with the German national colors and the Prussian state flag. Numerous dinners and luncheons were scheduled for the aviators and invitations to visit Austria, Italy and other countries poured in.

International.

The "Columbia" with new propeller, ready to fly from Kottbus to Berlin.

President Coolidge sent the following message to the men, in care of the American Embassy at Berlin: "Congratulations upon your wonderful feat in setting a non-stop record in conquest of the air. Our country rejoices with me in your safety making first sustained flight from America to Germany with our greetings to its people."

Following a week of social activities, the aviators left Berlin by train, on June 13th for Baden Baden, the *Columbia* being in the hands of the mechanics at Tempelhofer Field. At Baden Baden, the flyers were the guests of the Mayor and of Count von Bernstorff, who will be remembered as the German ambassador at Washington during the early days of the Great War. Crowds of people acclaimed them.

P. & A. Photo.

The "Columbia" flying low over Berlin just before landing there.

In the Lufthansa plane, they flew to Friedrichshafen where they visited the Zeppelin works and the plant of the Dornier airplane company.

From Friedrichshafen they went to Stuttgart by plane and were given a formal luncheon. Over one hundred thousand people lined the streets and many pelted the fliers with flowers. At Frankfort, in the evening, they were the guests of the city at an elaborate dinner in the Town Hall. After resting there overnight they went by air to Hanover and thence to Bremen and Bremerhaven. Leaving Bremen, they flew to Hamburg, where they were welcomed by a Senate delegation, and from there to Magdeburg and Berlin.

Hopping from Berlin on June 19th in the repaired Bellanca, Chamberlin and Levine reached Munich that afternoon. They were received by the Lord Mayor, representatives of the Bavarian Ministry, the Aero Club and the American Consul. The City of Munich presented the fliers with the Bavarian colors attached to an American flag and the golden pin of the German touring club. An official honor decoration was also given to them.

They arrived in Vienna at 7:25 in the evening during a heavy rain. High dignitaries of the Austrian Government, city officials and the entire general staff of the Army awaited the aviators in a reserved enclosure at Aspern Field. Outside, thousands of men and women roared a welcome. Both men were presented with diamond-studded medals by the Aero Club of Austria, and on the following day President Hainisch conferred upon Chamberlin the Austrian Order of Merit in recognition of his great non-stop flight. They are the first Americans to receive the honor for other than distinctly benevolent activities. It is the only decoration conferred by the Austrian Republic on foreigners.

Thousands of people made the seven-mile journey to the aerodrome at Aspern last Sunday and from 15,000 to 20,000 of them stood from four to five hours in a steady rain waiting for the Columbia to arrive, which it did three hours after the scheduled time. A crowd of several thousand took up a stand in front of their hotel when the fliers entered it after their arrival, and on Thursday afternoon, when Chamberlin and Levine left, it had only dwindled to

P. & A. Photo.

Levine and Chamberlin receive a royal greeting at Berlin.

AMOCO-GAS Took it Across!

Chamberlin and Levine Reach GERMANY

THE flight of the Bellanca Plane added another glorious chapter to the history of American achievements. Its non-stop flight across the Atlantic and into Europe was a triumph for its daring pilot, the designer, the builders of the plane and for AMOCO-GAS (Aviation Grade).

AMOCO-GAS provided unfailing power for the Bellanca plane!

Throughout the long, dark hours over the Atlantic, AMOCO-GAS kept the motor running with unbroken rhythm, reeling off the miles between New York and the coast of Europe. In this supreme test—as in every other test—AMOCO-GAS once more proved its unfailing dependability!

AMOCO-GAS was selected because it gave more miles per gallon—a most important point when mileage delivered would determine success or failure. And "more miles per gallon" is one excellent reason why you should be using AMOCO-GAS in your car, motor boat or airplane.

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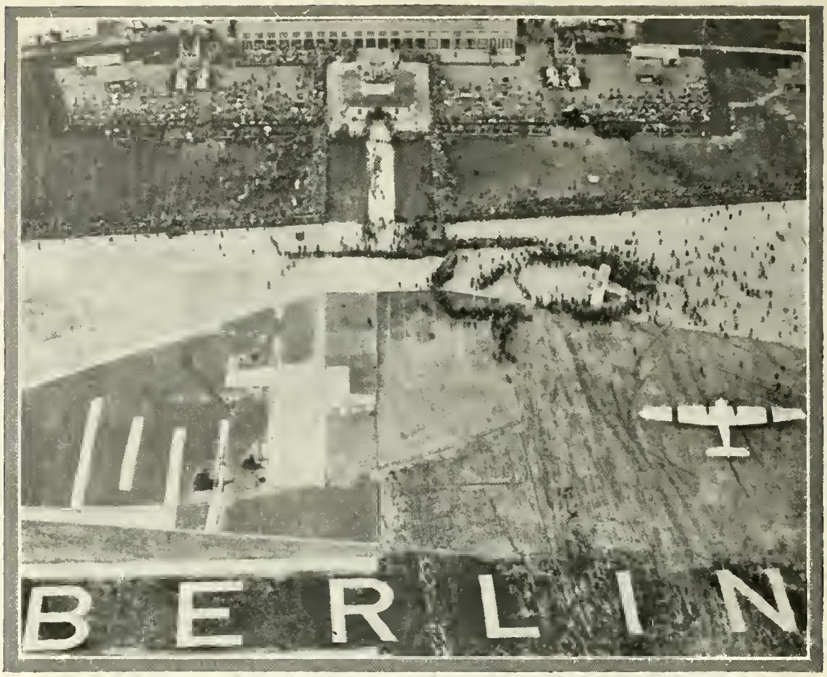
hundreds. Whenever they went forth they were followed by cheering Viennese.

On June 22nd the transatlantic fliers arrived at Budapest, then returned to Vienna and flew from there, through wind and rain, to Prague, Czechoslovakia, on June 23rd, where they were fêted by President Masaryk at Hardschin, Prague's ancient seat of government. The President of the Aero Club, the Mayor and the Secretary of the American Legation were among those who welcomed them. The news of their arrival spread rapidly and soon the streets were filled with the cheering Czechs. The American Minister, Lewis Einstein, gave the airmen a hearty greeting.



P. & A. Photo.

Tempelhof Field, Berlin, just as the "Columbia" landed on the field.

Hopping off from Prague the transatlantic fliers landed at Pilsen. After being guests of honor at a luncheon they visited the famous brewery where Pilsener beer is made. They continued their flight that afternoon to Marienbad.

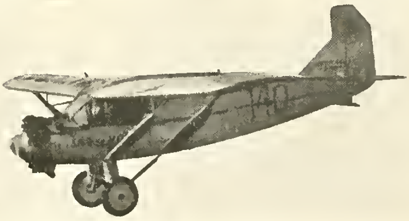
On June 27th the *Columbia* landed at Warsaw and immediately were surrounded by a cheering throng. The fliers were entertained by the Polish-American Association. Leaving Warsaw on June 28th, they flew to Zurich. They will visit Berne, Paris and London before they complete their air tour of Europe's leading cities. They will sail for home from Paris on the *Leviathan*, July 12th, bringing the *Columbia* with them.

TO Clarence Chamberlin, Pilot and Giuseppe Bellanca, Designer, we offer our congratulations for bringing new honor to American aviation.

The Wright powered Bellanca Monoplane was equipped with a

BOYCE MOTOMETER

on its flight from New York to Eisleben,



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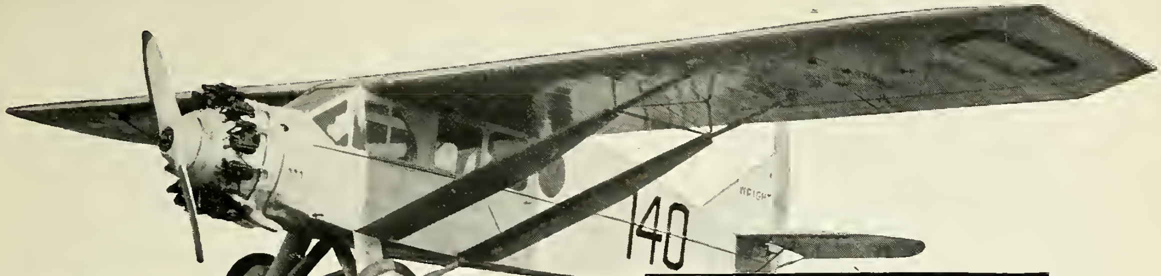

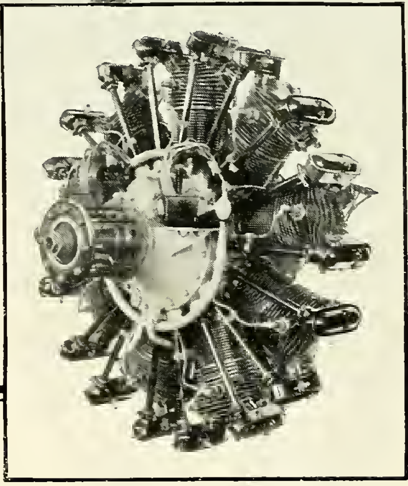

World's Trans-Atlantic Record —
World's Endurance Record —
both held by Wright-Bellanca plane
equipped with

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RING TRUE BEARINGS

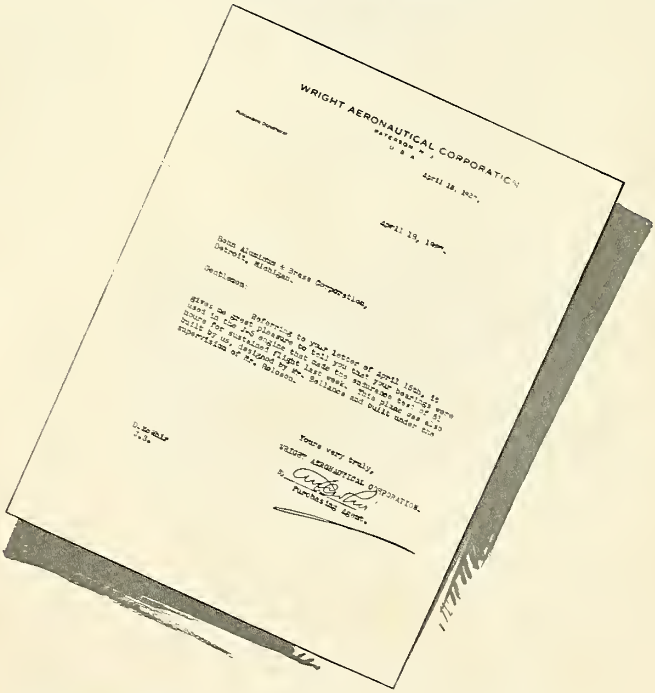
Once again the world is thrilled with a marvelous Trans-Atlantic flight—this time by Clarence Chamberlin and Charles A. Levine.

And again Bohn Ring True Bearings have played their part in achieving the final splendid result.

For the Spirit of St. Louis with which the indomitable Lindbergh made his flight was equipped with Bohn Ring True Connecting Rod Bearings.

And now the Wright-Bellanca plane, the holder of the world's record of 51 hours for sustained flight, and the one with which Chamberlin and Levine made their perilous crossing, in which a new world's non-stop long distance record was established, is equipped with Bohn Ring True Bearings.

We are proud indeed that Bohn Ring True Bearings should have had a part in three so magnificent and thrilling achievements.



WRIGHT AERONAUTICAL CORPORATION
PATERSON N. J.
U. S. A.

April 18, 1927.

April 19, 1927.

Bohn Aluminum & Brass Corporation,
Detroit, Michigan.

Gentlemen:

Referring to your letter of April 15th, it gives me great pleasure to tell you that your bearings were used in the J-5 engine that made the endurance test of 51 hours for sustained flight last week. This plane was also built by us, designed by Mr. Bellanca and built under the supervision of Mr. Roloson.

Yours very truly,
WRIGHT AERONAUTICAL CORPORATION.
Purchasing Agent.

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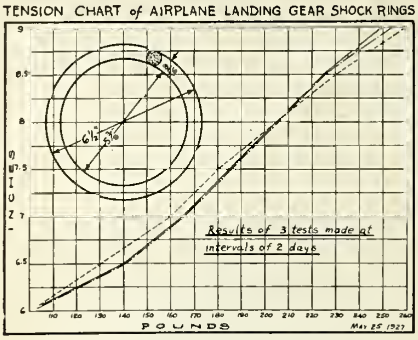

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shows why all representative American aircraft use Russell airplane landing gear rings and Rusco shock absorber cord in their construction.

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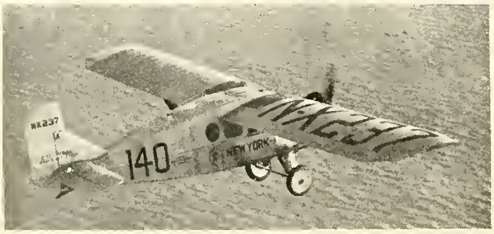

The Columbia flown by Clarence Chamberlin and Charles Levine from New York to Germany is equipped with Rusco Shock Absorber cord.

The Army transpacific Fokker and Commander Byrd's 'America' both are equipped with Rusco Shock Absorber Rings.

The Russell Manufacturing Company
349 Broadway, New York, N. Y.

ON behalf of its readers and advertisers, Aero Digest extends its sincere congratulations to the skillfull airmen who have made the recent transocean flights from America to France, Germany and the Hawaiian Islands. The exploits of these men forecast an early arrival of a new era in transportation. Their courage and leadership are an inspiration to those whose interest is in aeronautics.

Dexter Latches on Fokker Transports

The Fokker Transports used by Lt. Maitland and Com. Byrd in their transoceanic flights were equipped with Dexter Door Latches.

Dexter Latches are simple in construction, just three working parts, practically indestructible, positive in action, trouble proof, light weight, quickest and strongest in operation. Installation is simple—no mortising necessary—just bore two holes.

Complete and superior line of latches for every type of door.

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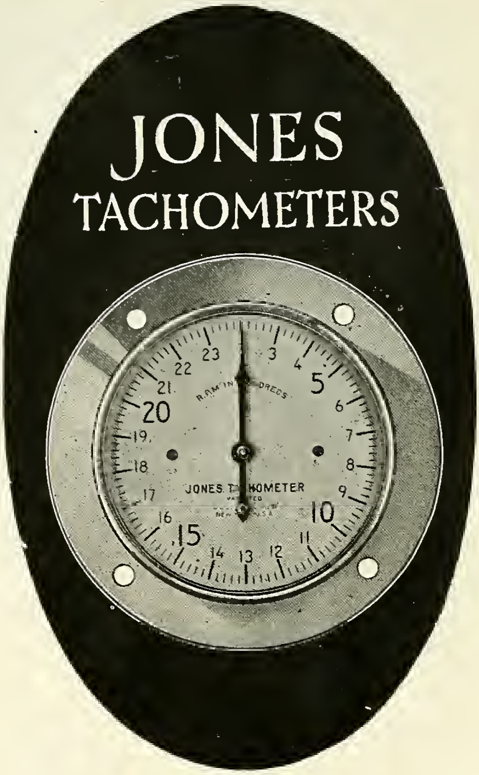
UNDOUBTEDLY the Bellanca Monoplane "Columbia" and the Wright engine installed in it are representative of the excellence of American aircraft design and construction. We are very glad to announce that our products were used both in the plane and the motor. Almost all manufacturers of aircraft throughout the country are pleased users of our products and service.

May we serve you in like manner?

AERO SUPPLY MANUFACTURING COMPANY, Inc.

Aircraft Screw Specialists

COLLEGE POINT
Long Island New York



JONES TACHOMETERS

AGAIN—

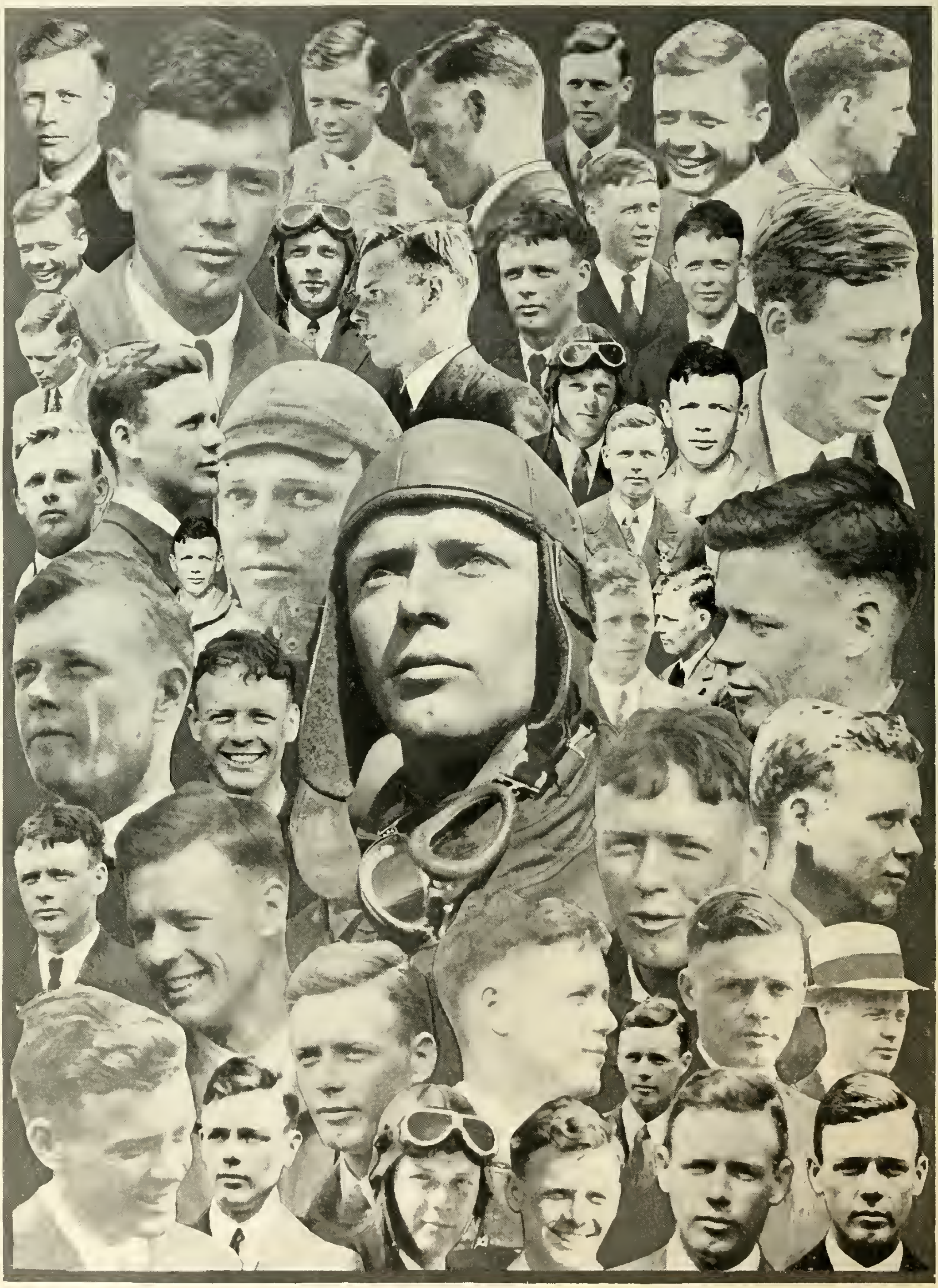
CLARENCE CHAMBERLIN used the Jones Tachometer exclusively to indicate the speed of his engine on his flight to Germany.

It is noteworthy also that Jones Tachometers were used exclusively on the NC-4 when it made its flight across the Atlantic in 1919 and on Captain Lindbergh's plane "The Spirit of St. Louis".

Such outstanding service speaks for itself.

CONSOLIDATED
INSTRUMENT COMPANY
OF AMERICA, *Inc.*

41 East 42d Street, New York City



As the camera has seen Colonel Lindbergh in many of his facial phases, his splendid flying "Eagle" face in the center being most characteristic.

COLONEL LINDBERGH'S HOMECOMING

FOLLOWING a feverish two weeks of receptions, medal presentations, and celebrations in France, Belgium and England, Colonel Charles A. Lindbergh in a British single-seater from Kenley Field hopped to Le Bourget Field outside of Paris, and thence, in a French plane, to Cherbourg, where on June 4th he boarded the U. S. battleship *Memphis,* homeward bound.

His own plane, the *Spirit of St. Louis,* carefully packed in two huge crates, had been placed aboard the cruiser at Southampton, England, the morning before.

The *Memphis* arrived at Washington on the morning of June 11th. On her bridge stood Colonel Lindbergh—his smile rapidly vanishing to awed wonder as he saw the great crowd and began to sense the honors awaiting him.

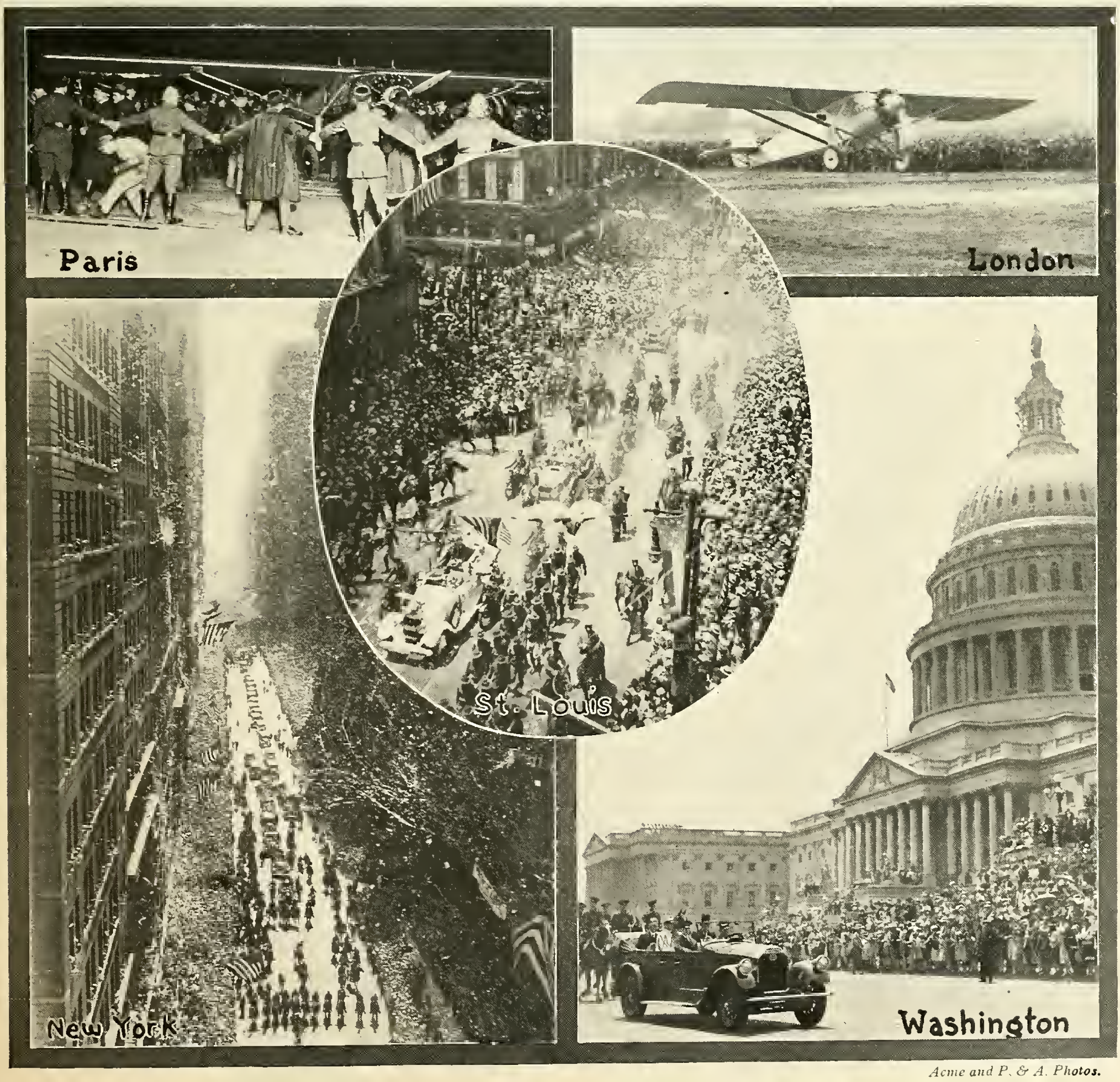
The nation's guns were booming thunderously in salute of him. Above the nation's warship squadrons of airplanes swooped, circled, and did him every courtesy they could—such aerial tribute as never before in the world's history had been paid to any man. The vast dirigible *Los Angeles* hovered high in air above, glistening in the sunlight.

And all because the tall, slender boy had come back to his native country.

Mrs. Evangeline Lindbergh, mother of the flyer, met her son on board the battleship at the Washington Navy Yard.

Then, escorted by cavalrymen, by infantrymen, by sailors of his nation's navy, by many of the greatest civilians in the great Republic, Lindbergh, heart of a vast procession, symbol of the soul of America's youth, a shy boy, a man of great achievement, proceeded to the natural amphitheatre which surrounds the monument to Washington, the founder of this nation whose foresight, idealism and faith looked forward to just such youths as this amazing lad. There he was greeted by the President of the United States after that President's wife, first lady of this nation, had made way for the great airman's mother at her side.

"He has returned unspoiled," said President Coolidge of "our ambassador without portfolio."



Acme and P. & A. Photos.

Throngs, such as have never before acclaimed any man in the world's history, welcomed Colonel Charles A. Lindbergh.

Then the President advanced and, taking Lindbergh by the hand, briefly explained what this young man had done and what the nation owed him—why it honored him.

He pinned upon his simple, blue civilian's suit the Distinguished Flying Cross and handed him his commission as a Colonel in the Officers' Reserve Corps.

One paragraph of the President's address retold the qualities which long ago had been discovered in this youth by the officers of the Militia Bureau of the War Department. In the nation's records these were specified after his first examination, as:

"Intelligent, industrious, energetic, dependable, purposeful, alert, quick of reaction, serious, deliberate, stable, efficient, modest, frank, congenial, a man of good moral habits and regular in all his business transactions."

Colonel Lindbergh responded briefly but without apparent nervousness: "Everywhere I went, at every meeting I attended, I was requested to bring a message home to you. Always the message was the same.

"You have seen, the message was, the affection of the people of Europe for the people of America demonstrated to you. When you return to America take back that message to the people of the United States from the people of France, England and Belgium."

The Lone Eagle.

Colonel Lindbergh and his mother were the guests of President and Mrs. Coolidge at the temporary White House on DuPont Circle during their stay in Washington.

That night he was the guest of the National Press Club at the Washington Auditorium, where he faced an audience of 6,000 cheering admirers. The newspaper organization presented him with a scroll containing a tribute from the press and he was there given the Langley medal on behalf of the Smithsonian Institute. Postmaster General New gave him the first special Lindbergh air mail stamps and the State Department tendered a volume containing messages of congratulation which the Department had received from foreign rulers and national leaders.

The following day he visited the Tomb of the Unknown Soldier and called on the disabled veterans at the Walter Reed Hospital. In the afternoon he had his first chance since reaching these shores to look at the other half of "we",—the *Spirit of St. Louis,* which had been re-assembled by navy mechanics.

The next day he rose early, attended a breakfast given by the National Aeronautic Association at which Commander Byrd presented him with the Hubbard Medal of the National Geographic Society which has been awarded to but seven men in 39 years—Commander Byrd, himself, being one of the seven. It was presented to Commander Byrd in recognition of his achievement in being first to fly over the North Pole.

Colonel Lindbergh intended flying to New York in his own ship, but as it was not functioning properly he accepted the offer of an Army Curtiss P-1 pursuit ship and made the flight from Washington to Mitchel Field, New York, escorted by twenty-one Curtiss pursuit planes commanded by Major Thomas Lanphier, in two hours and four minutes. At Mitchel Field he changed to an amphibian, the *San Francisco,* and proceeded as the passenger of Captain Ira Eaker, Pan-American flyer, to the Narrows and thence by boat to the Battery.

More than 4,000,000 people saw the flyer as he rode through a blizzard of paper in Broadway's frenzied canyons.

At the City Hall Mayor Walker presented him with the Medal of Valor and at Central Park Governor Smith hung around his neck the state valor medal awarded for "courage and intrepidity of the highest degree, in flying alone and unaided from New York to Paris, to the glory of his country and his own undying fame."

The next day's weather prevented the scheduled outdoor ceremonies, but during the afternoon Colonel Lindbergh slipped out to Curtiss Field and, in spite of the rain, took to the air in one of the Curtiss planes for twenty minutes. In the evening he attended a dinner given in his honor by the city.

On Wednesday he was the center of interest at a joint luncheon given by the Chamber of Commerce and the Merchants' Association, a boxing bout and two special theatrical performances.

At three o'clock Thursday morning, Colonel Lindbergh, attired in his dinner clothes and a borrowed helmet and leather jacket, hopped off from Mitchel Field in an army plane for Washington, making the trip in about two hours. At a little after five a. m. he got aboard the *Spirit of St. Louis* and returned to New York City.

Thursday was marked by a parade through the streets of Brooklyn with ceremonies in Prospect Park, a luncheon of the Knights of Columbus and a dinner of the Aeronautical Chamber of Commerce.

A very important event during the afternoon was the presentation of the $25,000 prize by Raymond Orteig, whom Colonel Lindbergh credited with first directing his attention to the possibilities of the flight from New York to Paris.

On June 17, Colonel Lindbergh flew, in nine hours and twenty-two minutes, to St. Louis, home of the backers of his flight, where he began another round of celebrations. The delay of two hours in his flight westward to St. Louis as compared with his flight eastward was due to the fact that he often flew low and circled about for the thousands waiting to catch a glimpse of his plane in flight.

When the World Champion Cardinals returned, all the pent up emotions which St. Louis had controlled for months—and years—found outlet in a turbulent welcome such as the city never had witnessed. In 1918 when news of the Armistice reached St. Louis, people went wild. Bells were rung, whistles and horns blown, tears shed. Consider that welcome to the 138th. Add to it a deeper pathos, a bit more of the sentimental. Exclude from the Cardinal and Armistice celebrations the tumult, but add to the latter more tears. Add a dignity to the whole. Then you shall be able to visualize the welcome which St. Louis extended its hero of the air.

From the moment the wheels of the *Spirit of St. Louis* touched the earth at Lambert-St. Louis Flying Field, the exultant crowd paid tribute to him. He was made a member of the Flying Eagle Patrol—Boy Scouts. At the baseball grounds, he raised the World's Championship pennant, won by the Cardinals last year.

He attended a banquet given by the city, a celebration held on Art Hill in Forest Park and the St. Louis Municipal Opera. Starting at three o'clock Friday afternoon, the St. Louis homecoming celebration lasted officially until Sunday night.

Colonel Lindbergh has received eighteen medals and

The most critical sixty seconds of LINDBERGH'S *flight were made on* Silvertowns!

THE *first* thirty seconds—roaring along the runway for the take-off! The *last* thirty seconds—landing at Le Bourget, amid the enthusiastic mob!

Tire-failure at the hop-off would have meant the blight of a magnificent adventure—perhaps the greatest of all adventures for the boy in the cockpit. Tire-failure on landing might have destroyed scores of lives.

But Lindbergh underwrote the safety of his venture with equipment nearer to absolute perfection than ever before assembled.

We are proud of Charles A. Lindbergh—and proud of his confidence in Silvertowns.

THE B. F. GOODRICH RUBBER COMPANY
Established 1870 Akron, Ohio

FOR SAFE HOP-OFFS AND SMOOTH LANDINGS

decorations from six different countries. These are:

The Cross of the Legion of Honor bestowed May 23 by President Doumergue, of France.

The Gold Medal of the Aero Club of France.

The Grand Medal of the City of Paris, which the president of the Municipal Council presented on May 26.

The Medal of Gold, awarded by the French Geographic Society.

The Cross of the Order of Leopold bestowed by King Albert of the Belgiums.

A gold medal awarded by the Royal Aero Club of Belgium.

A gold medal in the name of the city of Brussels.

The Grand Golden Sport Medal awarded by the German Automobile Club.

The British Air Force Cross conferred by King George.

The London *Daily Mail* golden Trophy.

The Lafayette Escadrille Gold Plaque of Honor.

The Plus Ultra Medal awarded by the Spanish Government.

The Distinguished Flying Cross, highest award of the United States to flyers, presented by President Coolidge.

The Hubbard Medal, highest award of the National Geographic Society.

The Langley Medal of the Smithsonian Institution, awarded only four times.

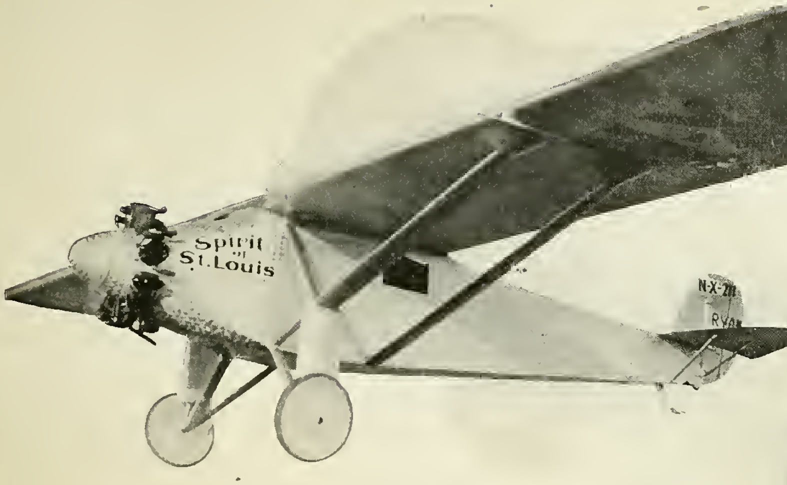
The Medal of the City of New York, presented by Mayor Walker.

The New York State Medal for Valor, bestowed by Governor Smith.

The gifts, medals and scrolls received by Col. Lindbergh were placed on exhibition by the Missouri Historical Society in the Jefferson Memorial at Forest Park, St. Louis, on June 25th.

Wide World, P. & A. and International Photos.

Colonel Lindbergh decorated and entertained by President Doumergue of France and Ambassador Herrick; in England by Lord Lonsdale and the Prince of Wales; by King Albert of Belgium; and in the United States by President Coolidge.



The magneto contact points helped to make it possible

WILSON Platinum-iridium Contacts are equipment on the "Spirit of St. Louis" in which Col. Charles A. Lindbergh accomplished his feat extraordinary.

¶ Wilson Contact Points, manufactured in platinum alloys, well known for years for their merit, quality and faultless performance, have again stood up under the test supreme.

PLATINUM

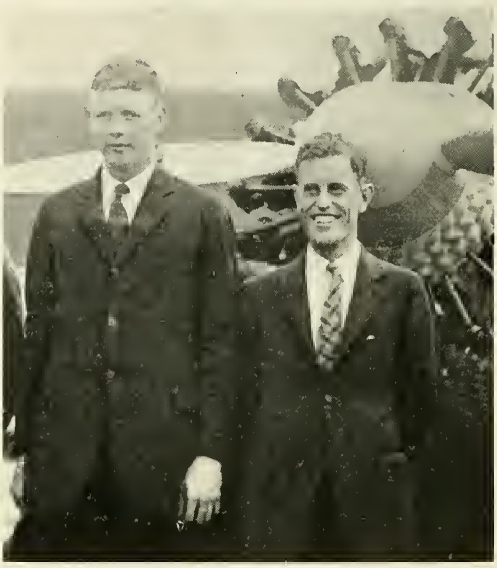
SILVER AND OTHER PRECIOUS METAL CONTACTS—WILCO THERMOSTATIC METAL

THE H. A. WILSON COMPANY
97 Chestnut Street, Newark, N. J.

TECHNICAL PREPARATION OF THE RYAN NEW YORK-PARIS AIRPLANE

By Donald A. Hall
Designer of the NY-P Monoplane
Chief Engineer, Ryan Airlines, Inc.

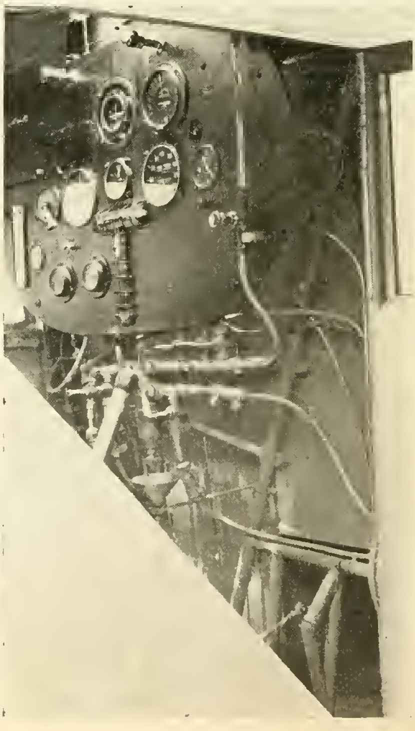
THE development of the Ryan NY-P airplane was begun with the idea of using a standard model Ryan M-2 and making modifications to suit the special purpose of a flight from New York to Paris. Upon Colonel Lindbergh's arrival at the factory on February 26, it was quickly determined that modification of the M-2 was less practicable than developing a new design. Colonel Lindbergh laid out the following basic specifications: that the airplane should be a monoplane type; powered with a single Wright J-5-C engine; have a good power reserve on take-off when carrying more than 400 gallons of gasoline; and, must have the pilot located in rear of all tanks for safety in a forced landing.



Colonel Chas. A. Lindbergh and Donald A. Hall.

The decision on these basic specifications immediately determined the inadvisability of using the standard Ryan M-2 model. The design of the airplane was then laid out anew, the fuselage following the standard model approximately in regard to design and structure, but being lengthened two feet. The fuselage structure was designed for full load to suitable load factors for full loading in flying and landing conditions. A wide tread split axle chassis was designed to a four load factor at full designed load. The wing structure was designed to suitable load factors in high incidence, low incidence and diving conditions at full load.

Colonel Lindbergh took a very active interest in the design of the airplane and he closely coöperated with me throughout the entire construction of the plane. The location of the pilot's cockpit (cabin) in the rear of the fuselage and entirely enclosed, which is the most radical feature of the design, had its development based on the primary requisite of safety, it being considered that in the event of an accident the pilot would be in the safest possible position. The disadvantages as regards visibility were quickly decided to be of relatively minor importance.



The instrument board of the Ryan NY-P.

The periscope was suggested by Mr. Randolph, of the Ryan Airlines, who had had considerable submarine experience. This suggestion was accepted by Colonel Lindbergh with the limitation that if it was not satisfactory or had any aerodynamical disadvantage it would be discarded at New York. The periscope consists of a panel in the instrument board through which a view directly forward is afforded by an angular mirror. It has a frontal size of about three by five inches, which projects from the left side of the fuselage, and which can be retracted when not in use. The device proved of no disadvantage aerodynamically on account of the retractable feature, and was of certain utility during flight.

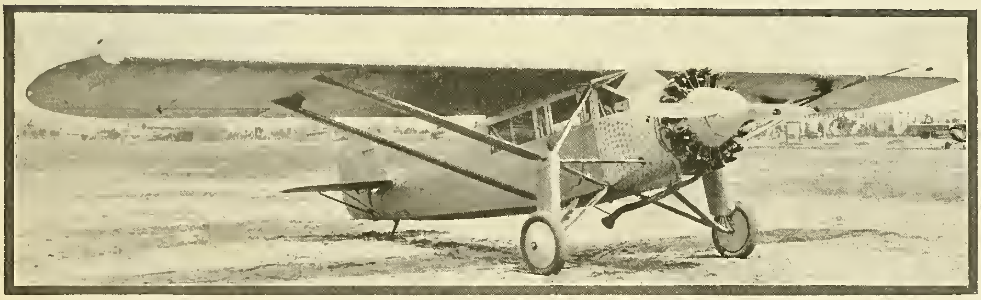
To ensure proper balance the engine was of necessity moved forward considerably. The additional space in the forward part of fuselage, which was provided by this extension, was utilized for the oil tank, located directly in the rear of the engine and a gasoline tank was located in the rear of the oil tank. The oil and tank provided an excellent fire wall. It was found that with full load the two tanks, although so far forward, did not interfere with the trim of the airplane to an extent which could not readily be taken care of by the adjustable stabilizer.

All of the various items of design had the most careful consideration, in which Colonel Lindbergh took a prominent part. The interest shown by him in the detailed design and construction of the airplane was in no way a critical interest. Colonel Lindbergh's time was further occupied during the period in which the airplane was under construction in a careful and intensive study of navigation. This study was most complete. During four weeks practically all his waking hours were occupied by this study of navigation and the preparation of charts and data for use in a dead reckoning flight. It should be borne in mind that he had practically no technical knowledge of the art of navigation prior to this time with the exception of such aerial navigation as he had had in his Army and Air Mail experience.

Members of the Ryan Airlines factory organization who were responsible for the construction of the airplane are Mr. B. Franklin Mahoney, president of the company; Mr. W. H. Bowlus, factory manager; Mr. Bert Tindale, shop superintendent and in charge of wing department; Mr. Walter Locke, in charge of purchasing department, who also assisted in engineering; and the following men in charge of their various departments—Mr. McNeal (final assembly): Mr. Fred Rohr (tank and

"As a matter of fact I had what I regarded and still regard as the best existing plane to make the flight from New York to Paris"

Col. Charles A. Lindbergh from an interview cabled to New York *Times*, May 22d, the day after he landed in Paris.



THE RYAN B-1

PRICES—(at San Diego)

Ryan M-2, 150 H. P. Hisso Motor	$3750
Ryan M-2, Less Power Plant	3000
Ryan M-2, 180 H. P. Hisso Motor	4000
Ryan M-2, Wright Whirlwind Motor	8100
Ryan 5-Place Brougham 180 H. P. Hisso Motor	5750
Ryan 5-Place Brougham, Less Power Plant	4650
Ryan 5-Place Brougham, Wright Whirlwind Motor	9700

RYAN AIRLINES, INC., San Diego, California

cowling); Mr. Fred Ayers (covering and finishing); Mr. Anderson (welding); and Mr. Morrow (fitting).

Colonel Lindbergh paid close attention to the final assembly securing a thorough practical knowledge of the major units and especially in reference to the fuel system. Immediately upon the completion of assembly, the flight tests were begun, the preparation for which had been made in detail. Colonel Lindbergh had laid out with the writer the tests to be made, and all of the test flights were flown by Colonel Lindbergh himself, who is the only pilot who has ever flown this airplane. In order to observe the plane's behavior in the air, the operation of the instruments, fuel valve system, and the "econometer" of Colonel Lindbergh's own invention, I accompanied him on one of his test flights, sitting on the right arm of the pilot's seat. We found the flying and landing vision to be very satisfactory.

A program of tests was carried out which was sufficiently comprehensive to check the theoretical performance. A series of flights with fuel loads of from 36 to 300 gallons was made for the specific purpose of checking distances required for the plane to take off.

All of these flight tests were made for the primary purpose of checking the theoretical figures as to performance, and while not as comprehensive as might have been possible had more time been available, in the opinion of Colonel Lindbergh they were sufficient.

It is hoped that from these few paragraphs it will be understood that the ultimate performance of the "Spirit of St. Louis" is largely the result of the exceptionally careful and painstaking effort on the part of Colonel Lindbergh in his preparations while at San Diego, and that his evident confidence in the Ryan Airlines organization was merited. I am sure that Colonel Lindbergh did not leave San Diego until he was absolutely certain that he had an airplane with which the transatlantic flight was possible, and that this conclusion was reached after a tremendous volume of work which he set for himself and accomplished while at the Ryan Airlines factory.

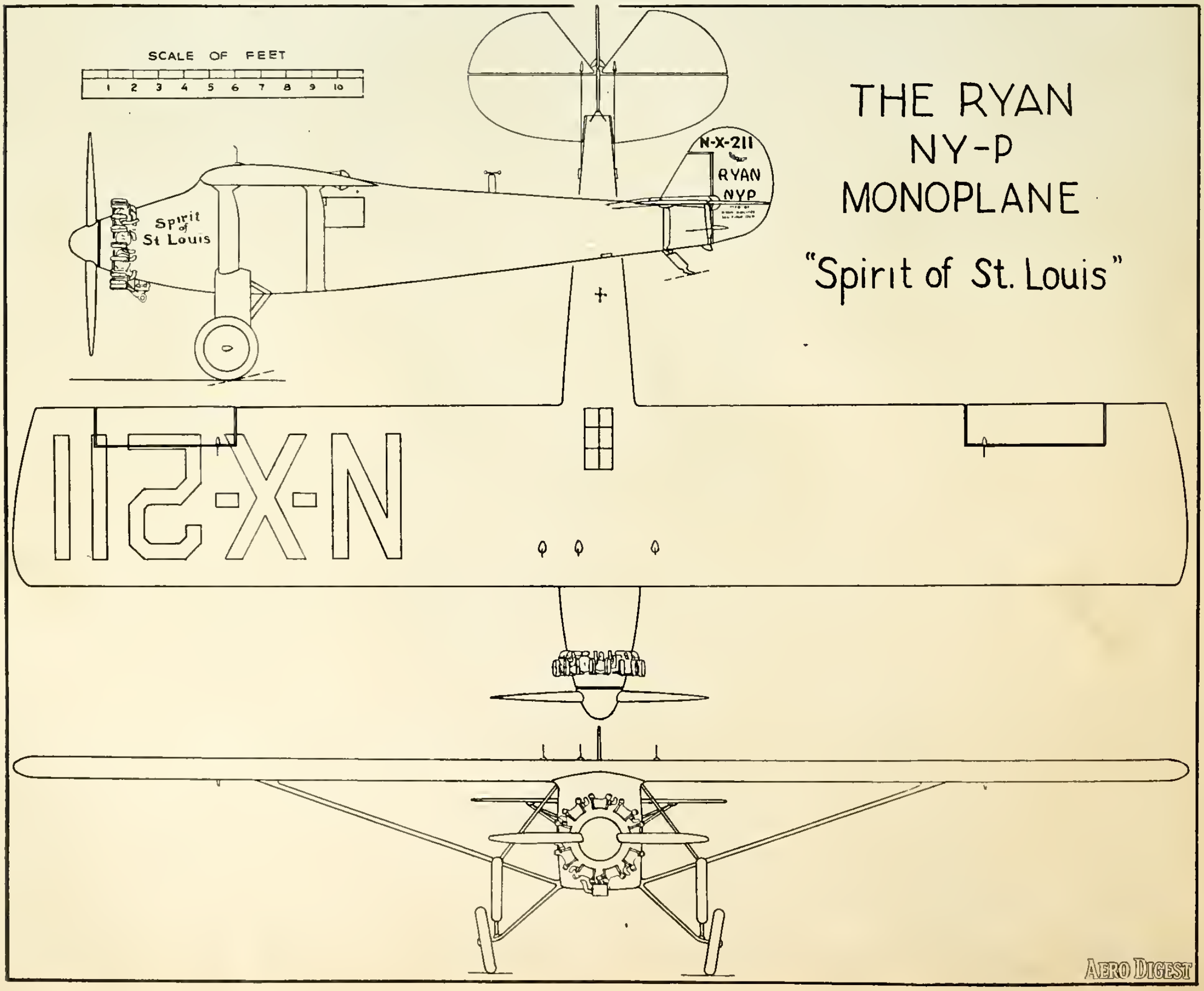
In regard to the time taken to design and construct the NY-P the following notes will be of interest:

The complete design took 850 total man hours of engineering time between February 26 and May 10, when the NY-P left San Diego for St. Louis, the first leg of its flight to Paris. Of this total, 775 hours of my time was required in making the aerodynamical and structural design and flight testing. In the actual construction, 3,000 man hours were required, not including the superintendent's and manager's time.

In the June issue of AERO DIGEST, the detailed weights given under the heading "weight distribution" were merely preliminary estimates made before the design was started. The other weights, however, are correct.

The following weights and unit loadings were compiled as a record of the actual take off condition as the NY-P left New York for Paris. It will be noted that Colonel Lindbergh carried 25 gallons

(Continued on page 75)



Lindbergh! Chamberlin!

Your screws were used in the following places on the Bellanca airplane:

Window frames and slides for same
Door hinges and door covering
Tail skid fairing
Miscellaneous clamps and fittings.

We are very glad to be able to furnish you this information as we have found that your product saves time, money, and weight in airplane construction.

Yours very truly,
K. M. Lane
K.M.Lane
Chief Plane Engineer

KML.HER

It might interest you to know also that your hardened sheet metal screws were used to secure the exhaust piping leading to the carburetor air heater on Captain Lindbergh's New York to Paris plane.

Yours very truly,
K. M. Lane
K.M.Lane
Chief Plane Engineer

KML.HER

EACH flight was impressive in its exhibition of daring, skill and endurance.

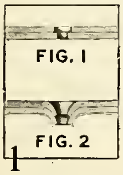
Each stirred the world to a recognition of American supremacy in small things as well as great, from the stability of the plane's smallest construction detail to the supreme courage that steadied the hands at the "sticks."

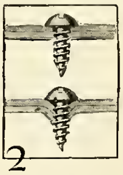
Each flight was a gruelling demonstration of the staying qualities of every part of the planes. Both proved the remarkable holding power of fastenings made with PARKER-KALON Hardened Self-Tapping SHEET METAL SCREWS, as these Screws were used for making some assemblies on both aeroplanes.

According to the builders of the Bellanca plane, these Screws saved "time, money and weight in aeroplane construction."

Easy to use—just two simple operations:

1st. Punch or drill a hole as in Fig. 1; or pierce a hole as in Fig. 2.





2nd Turn in the Screw with a screw driver

Parker-Kalon Hardened Self-Tapping Sheet Metal Screws eliminate the costly tapping operation. They make better fastenings than machine screws, stove bolts, etc.,—fastenings which do not readily loosen under vibration, as these flights to Europe have conclusively proven. More than 35,000 manufacturers of sheet metal products are saving 50% to 75% of assembly costs by using these Screws. Let us SEND YOU FREE SAMPLES for trial—just drop a line and tell us how you wish to use them.

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HARDENED SELF-TAPPING
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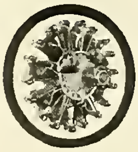
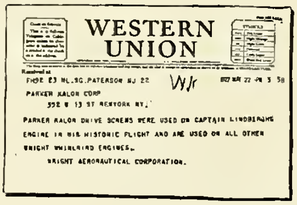


Over land and sea!



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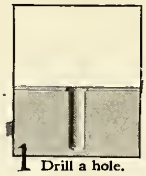
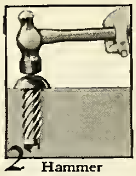
PARKER KALON CORP
352 W 13 ST NEWYORK NY.
PARKER KALON DRIVE SCREWS WERE USED ON CAPTAIN LINDBERGHS ENGINE IN HIS HISTORIC FLIGHT AND ARE USED ON ALL OTHER WRIGHT WHIRLWIND ENGINES.
WRIGHT AERONAUTICAL CORPORATION.

Over land and sea, the Wright Whirlwind engines carried these history-making planes. On every Wright Whirlwind engine, PARKER-KALON Hardened Metallic DRIVE SCREWS are used. These Screws eliminate taps and tapping operations.

Easy to use—just two operations.



1 Drill a hole.



2 Hammer in the screw.

More than 15,000 plants in the metal working industries are cutting costs, increasing production and making better fastenings to steel, cast iron, brass, aluminum, Bakelite, etc., through the use of Hardened Metallic Drive Screws. You can get similar results. SEND FOR FREE SAMPLES.

Parker-Kalon
Hardened Metallic
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AIR—HOT AND OTHERWISE

Oh, What a Man!
Salute!!!
A Plain Speaker!

By Frank A. Tichenor

"AIR-HOT and Otherwise" we call this department. If the friction of high-speed planes could heat the general atmosphere "there wouldn't be" (as my old cullud mammy used to say) "no otherwise" at this particular mom-ment. All our air would be red hot. The American and adjacent atmosphere, in fact, has been as full of wonder flights, each accomplishing something real, as the war years were of rumors.

What days! Aviation for which we, brethren, have worked ceaselessly and which we have known as upon the way, arrives.

Lindbergh towers a shining figure of accomplishment. Chamberlin tarries in a Europe which he reached in one great hop. Maitland and Hegenberger have conquered the first half and more of the Pacific in their Hawaiian flight. Byrd, long delayed by adverse weather, has carried a record-breaking load over the Atlantic.

The two oceans do not understand what it is all about. The wild waves probably are saying puzzled things.

The pioneers who have sacrificed and dared and done, who have suffered gloriously in pocket as well as sometimes in their broken bones and contused muscles, and all those who have helped them and believed in them are finding on their faces when they wake up in the morning the smile that won't come off.

"Hurray!" roared the Yank when the Armistice was signed. "Hurrah!" said the Englishman, with care, almost correcting him. "Hurroo!" warbled the Mick.

Now take your choice, ye brethren of the Air Klan. All three words mean the same thing and that thing is what we mean and with good reason. All together—ready —hip . . . hip . . .

LINDBERGH said a mouthful to New York's businessmen. His whole flight was a facer for the old-line sailor and his old-line instruments of war, just as it was for some of the old-time instruments of peace. His words have been bomb-like for all aviation's enemies. He made the members of the Chamber of Commerce and the Merchants' Association in the richest city in the world shiver in their chairs and spill their—er—ice-water (this being a prohibition nation) when they listened to his words.

As the young man, whose slimness has become more widely world known than any great king's fatness ever was, said to those businessmen in the metropolis:

"New York is probably the most vulnerable spot we have for air attack," those owners of New York, probably for the first time began to think of this great matter seriously. Lindbergh has become a national schoolmaster.

"For example, what would happen to a $20,000,000 battleship if we take, first, a hundred pursuit planes costing $2,000,000, which is more than they do cost, attacking that ship to clear the deck of anti-aircraft and suppose we lose half of them—which we won't—there are fifty pilots gone, $1,000,000 lost and a battleship helpless.

"If we follow them with a dozen or two bombers of which very few would be lost, with the battleship decks cleared, that ship would be sunk at a cost of less than one-fifth of its own cost, probably less than a tenth. The loss in personnel of the pilots might be estimated and exaggerated at 100. You all know the number of men it requires to man a battleship."

THE applause which has greeted Lingbergh's demand for preparedness has been illuminating. Perhaps New York is really waking up to its defenseless state. Perhaps it realizes that if airplanes can take off from Long Island and fly to Europe, similar craft can take off from Europe and fly to Long Island—or anywhere else along our coast or even to our interior if we are not ready to repel them.

The Colonel did not go so far as to say that Army and Navy, sooner or later, will be mere feeders for the Air Force, but many careful military thinkers would have agreed with him had he said even that.

Lindbergh represents at its greatest glory this American generation. "Thank God this youth was spared," many a Gold-star Mother, has said, almost in a prayer, as she has thought of Lindbergh, watching him in New York, or Washington, or elsewhere in America.

In European capitals other multitudes of mothers gazed on him and chokingly reflected that he was what they would have wished their war-killed sons to be if they had lived.

"We do not want war in this country," he declared, "but one of the surest ways to avoid war is to be prepared for it.

"There is no longer any doubt that our Air Corps will play one of the most important parts in the next war, if we have one. At present we have not sufficient personnel for such a corps. We cannot train pilots properly from raw material in a few weeks or a few months. But experienced pilots from commercial flying can be made into military pilots in a very short time and a well developed commercial air service would be invaluable to America in case of war. It is a necessity not only of good business but of self-preservation. We must have commercial flying here if we want to hold our lead in the world's business, but, more than that, we must have it in order that in case of war-emergency it may be for us a reservoir of trained personnel.

"New York, the richest city that we have, is probably the most vulnerable spot we have. This greatest city in the world has not an airport to compare with the airports of some small European cities.

"We have the finest Air Mail service in the world and we shall have the finest passenger service—some day."

Plenty of other minds are beginning to comprehend the things he realizes—the things this magazine has seen and tried each month to warn the people and the Government about for a long time.

We like Lindbergh. He is as good a preacher as he is an aviator. Let us heed him.

HATS off to all our earnest fighting-men who work and win. They are not arm-chair sitters in Department buildings down in Washington. They are of material like that from which we in the past have got our Lawtons, our Mileses, our Pershings, our Deweys and our Simses. Maughan, an Army flyer, did the dawn-to-sunset flight across the Continent two years ago. Read, Hinton and Towers of the Navy made the transatlantic crossing, by asserted jumps, but a real crossing. The Army Air Corps sends Maitland and Hegenberger, two of its most able flyers, on a non-stop flight to Hawaii.

When another Roosevelt mind comes along and makes the soldiers and the sailors mount horses and ride, or boats and row, or planes and fly, with arm-chair service held at naught, then we will

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AVIATION'S FUTURE in UNITED STATES

By

Major-General M. M. Patrick

Chief, U. S. Army Air Corps.

(Courtesy of the New York Times)

ARE we behind Europe in developing aviation? This is a moot question upon which much has been said and written, particularly during the past five years. In considering this matter from a national defense viewpoint it presents two distinct phases. When we examine the figures which show the strength in pilots, in enlisted men and in planes of European countries and contrast these figures with our own, it is evident that we have not as yet provided an air force comparable in strength with those of Britain and France, while we are, for the present somewhat superior in numbers to those of Japan and Italy.

On the other hand, our ability to design engines and aircraft and to manufacture them is beyond question at least as great as that of any other country in the world. The fact that three flights have recently been made from the Continental United States to the Continent of Europe, in planes designed and built here and powered with motors of our own design and construction, emphasizes this phase.

These same flights, although made from west to east, have served to minimize the feeling of security that previously existed, a feeling based on our geographical location. They have brought Europe closer to our Eastern seaboard than was ever estimated before.

While it is true that aircraft capable of making such a flight from east to west and carrying an effective load of explosives may not now exist, these recent accomplishments have removed doubt that such aircraft can be designed and built and that they will be in existence in the comparatively near future.

It may be accepted as a fact that in case of war within the next few years there is more than a possibility that we might expect a fleet of enemy airplanes, each carrying sufficient quantities of high explosives and probably gas bombs, launching an attack upon and paralyzing some of our great industrial centers, while also carrying enough fuel to enable them to proceed to a neutral country to be interned.

In order that we may regain this feeling of security which we have lost, owing to these transatlantic flights, we must have a sufficient air force to meet any possible enemy in the air, for after all such a force is the best insurance against such an aerial attack and it is the truest form of preparedness.

It is impossible to analyze properly the military air strength of any country without considering its commercial aircraft development. Extensive commercial development means well-equipped aircraft factories with trained personnel, airports and airways, and the latest scientific accomplishments in airplane design, all of which can be immediately converted to military use in event of hostilities. This brings forth another question: Are we behind Europe in the development of commercial aviation? Let the following facts speak for themselves:

As early as February, 1919, the British Parliament created a Department of Civil Aviation, the function of which is to formulate air navigation regulations, establish airways and airports and in general encourage and supervise aerial transportation. With slight variations, France and Italy quickly followed this example, with the result that for several years the European Continent has had a well-organized system of airways in operation. It was seven years later before the United States, in creating an Air Division in the Department

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Maj.-Gen. Mason M. Patrick, Chief of Air Corps, who retires December 13, 1927. The New Chief—Brig.-Gen. James E. Fechet.

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BYRD

DON'T let anybody in your presence speak of Byrd's flight as a failure. It was an immense success. Byrd not only crossed the ocean in an aircraft carrying passengers, but, because of the impenetrable fog which made descent upon land dangerous, he stayed in the air much longer than would have been the case if he had found it possible to go down when he first reached Paris. He could not do that, for he could not even tell exactly where Paris was.

As a matter of plain fact his achievement, complicated by his wanderings over France and his final forced landing in the ocean, was a greater one than that which he had set out to make.

That the operation of this airplane was rendered difficult by fog is no indication that air navigation is unduly hazardous. The operation of water-borne vessels always has been rendered difficult by fog. When such fog as Byrd found high above them lies upon the surface of the water surface vessels make no effort to go into harbors. Even in these days of highly perfected instruments of navigation and radio communication any long period of dense fog will make ships refuse to take the chance still involved in trying to enter, for example, New York Harbor.

In effect ships do exactly what Byrd did. They anchor in wide waters where comparative safety lies and wait for fog to lift. Byrd took his plane down to the water, upon which he could settle without crashing. This was the sensible thing for him to do.

Fate could have imposed no more difficult conditions than it visited upon Byrd. Yet he achieved more than he started out to do in the matter of distance flown and time in the air and ended the adventure for himself and his associates without loss of life or, apparently, serious total wreckage of his plane. As I write reports conflict as to just how much the ship was damaged.

Byrd did magnificently.

This man deserves great honor from his countrymen. First to fly over the North Pole, he also is first to have accomplished a transocean flight with passengers.

LINDBERGH

"IF he only doesn't lose his head!"

How many have said that about Lindbergh after they have read in the newspapers the wild (but usually true) stories of amazing offers made to him by the movies and other agencies of exploitation.

Well, he hasn't lost his head.

The connection which this amazing youngster had made with the Daniel Guggenheim Fund for the Promotion of Aeronautics brings him no mad income. What it does bring him is an opportunity of exactly the sort he wants. He is, among other things, to travel here and there throughout the country explaining to the people of the nation what aviation, if they do that which should be done to develop it, will mean to this great nation.

In other words Lindbergh is to become the nation's greatest builder of landing fields. As soon as cities and towns generally build landing fields, light them and reasonably equip them, planes will seek them, and, because the fields exist to be sought and used, planes will increase in number. With planes increasing in number men competent to operate them will increase in number and as they increase in number they will increase in knowledge and achievement.

Now and then among their numbers a genius—like Lindbergh—will develop. Most of the continually growing legion of airmen will be heroes if occasion for heroics comes. That is American—as American as the airplane itself; as American as Lindbergh, son of an American Congressman and an American school teacher. Once more Daniel Guggenheim's great value to the aeronautic industry is proven—would that we had more like him.

TEAM WORK

THE appointment of General Fechet as Chief of the Army Air Corps was a gratifying action on the part of those who had the power to name the man. The Air Corps will profit by it, the country will profit by it and it will benefit the cause of aviation generally. General Patrick worked for it, or Secretary Davis never would have named Fechet. Such episodes are good symptoms.

WATCH YOUR STEP!

THE transoceanic flights seem likely to have one unfortunate result. They are being used as an excuse for the flotation of all sorts of more than doubtful aviation company schemes. It's easy and doesn't cost much to incorporate a company—and maybe the promotors can sell stock. It's a slight gamble with possibly large winnings in the offing.

To-day throughout the country large numbers of glib-tongued men, and some of those women who are said to be possessed of what stock vendors call "personality plus" are peddling the "securities" of hitherto unheard of airplane manufacturers upon the highways and the byways of the nation.

The citizen who buys stock in an unknown aviation company is the citizen who would buy stock in an unknown oil well. Unfortunately his name is Legion. Every man legitimately and honestly interested in the development of American flying will warn as many possible investors as he can find not to do anything of the sort without the most rigorous and searching investigation by some expert qualified to give an accurate opinion as to actual value.

It would be most unfortunate if the wonderful achievements of Lindbergh, Byrd, Chamberlin and the Hawaii flyers, by preparing the public mind to accept anything as possible in aviation, should smooth the way for any successful swindles. It will be well if the American public, while placing its firm faith in aviation, shall regard with vigilant suspicion any glib-tongued, professionally pleasant stranger or half-known acquaintance who suggests that "there are millions in it." There ARE millions in it; but they will be taken out by the hard-working, long-suffering men to whom they honestly belong—those who in spite of all discouragements and setbacks have worked ceaselessly, self-sacrificingly to advance the art, and by those who sensibly associate themselves with them. All amateur and speculative aviation projects should be avoided by investors. At present there is no room in the air-equipment industry for the speculative investor.

Now is the time for those men who have strained and striven, and for all honest men who work and hope for

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A NOD AND A WINK

At Newfoundland

By

Cy Caldwell

Our own Cy—the world's least photographed pilot.

WELL, Sir, you six readers wouldn't guess in a thousand years where I'm sitting as I tap off this bit of spiritual encouragement to hold you through the month of July. You probably think I'm in my little apartment in New Alcohol on the Subway where I've been hibernating all winter, growing fat and feeble-minded. Well, I'm not. I'm sitting on the posterior extremity of what masquerades as a railroad train, pounding along a set of narrowgage rails laid through the center of Newfoundland. We've just left St. John's where I flew this morning with F. Sidney Cotton in the *Jeanne D'Arc,* powered with 200 h.p. Wright Whirlwind motor. (Advertisement — Mr. Peterson please mail check care of Nungesser-Coli Search Expedition, somewhere in Newfoundland, Labrador, or the North Atlantic and points North, West and East.) We were up at Port Blandford when two exhaust pipes developed fractured jaws. The nearest place where a welding outfit was obtainable was St. John's, 100 miles away—quite a snappy and up-to-date country, this one—so in we flew and turned the pipes over to a welder. Then, as I had to get this story off on the only train that connects with a boat for Nova Scotia for the next three days, I hopped this rattler—I do not speak figuratively and am bumping along on it to Port Blandford, which is 150 miles by rail, though only 100 by air. By the time I get to Port Blandford this yarn will be finished, 57 more bolts and nuts will have fallen off the rolling-stock, and I shall be exhausted. But the story will be on the mail car ahead, and it will get to New York in time to catch the next issue of AERO DIGEST—God and the Newfoundland Government Railway being willing. I'm trusting in the Lord, but I haven't any too much faith in this train. And I'll tell you why.

This railroad was built by the mile and paid for by the foot, or inch, I guess it was. And what with the hills and rocks and bays and the natural instinct of a railroad contractor who is being paid by the mile not to spare the tax-payers a single mile, this road makes as many twists and turns as a dry Congressman trying to snatch a few wet votes. It starts off to go some place, changes its mind, comes back and looks at the place it started from, and then makes a fresh start for some other place. It's narrow gage, which means that compared to it a Kansas Methodist is really broad, and a Tennessee Fundamentalist absolutely wide and open. The little cars hang out quite a distance on each side of the rails, making the cars sway whenever the engine goes mad and hits up the awful speed of 20 miles an hour. Whenever they get a really strong wind in the winter months they have to order all the crew and passengers out to hold the train on the rails. One train got right away from them last winter and was blown from Port-aux-Basques all the way to St. John's, arriving there ahead of the train that had started two days before. In fact, if anyone wants to get anywhere quickly in the windy season, he doesn't go by train. He just opens his umbrella and hopes the wind holds until he arrives at his destination.

Talk about wind! This is where they make it. I've heard rumors that the Navy was going to send the *Los Angeles* here for a cruise. If they do, the only thing that will be left of it will be that part of the landing crew who let go the mooring-ropes. The *Los Angeles* and the rest of the landing crew will be seen heading east and going fast. Then they can change that worn-out gag about "Hands across the sea" to "All hands and the cook across."

We're just passing Conception Bay, running along the edge of the shore. Out in the bay, between here and Bell Island, a huge iceberg is aground. Cotton and I saw it from the air when we flew from St. John's to Placentia on June 9 and searched the intervening country for a sight of Nungesser's and Coli's missing White Bird—which is our purpose in coming to Newfoundland, and which I shall get to in due course and in my rambling style—or lack of style, I should say. But about this iceberg—in the last ten days it seems to have diminished by half. There's only about a small city block of it there now—say a block at the corner of 42nd Street and Broadway, New York. Nine tenths of it is under water, and the part above is the size of a city block—so you get a fair idea of how much ice that is. If I had it parked some place in Van Cortland Park, I wouldn't have to do a thing but chop hunks off it for the next two years and sell to the Bronxites in order to make a good living. It would be just so much cold cash, as it were, and, in fact, as it is. You can see from that how misplaced everything in this life is. Here I could go out in a boat and just take that berg for nothing. And when I had it I wouldn't know what to do with it. Whereas, if I had it in New York I'd be worth a cool million. And if I had in my apartment in New York all the rum I can buy legally in Newfoundland, I'd be worth even more than if I had the iceberg there. And I'd have more customers, and better satisfied customers, at that. But there's no use my making myself and you six readers miserable talking about the spiritual side of life, when I have all the rum here and all you poor free citizens have is the craving. And another funny thing is that now I'm up here where I can get it, I don't care whether I have it or not. I don't expect Casey Jones and Elliott Springs and Henry Wacker to believe that, but it's the truth. Approximately the truth, anyhow. You six readers believe that—it will help you to believe that Jonah and the whale yarn easier.

Just leaving Conception Bay. Wish I knew how it came to be called that. There's a place up here called Heart's Content and another place called Heart's Delight, near Witless Bay. You can't beat these lads on snappy names.

Well, I must tell you a little about this Search Expedition I'm on, but I won't try to describe the flying very much, or I'd still be pounding this old Corona when we got to Port Blandford. We've wired in a daily report of our explorations, so I'll just ask the young lady editor to snatch the facts from those reports, and I'll confine myself to the fancies. I don't care a great deal for facts, anyhow. The difference between a human being and a cow, for instance, is that a cow lives solely according to fact, while a human, or anyways near it, indulges in fancies. The old cow looks at grass and water — and sees the plain fact that it's food and drink. But a human looks at grass and water and sees beauty and nature; the green of the grass in spring that gives the promise of harvest, the assurance that this old, old world is growing young again each year, and will continue to grow young every springtime for us folks to enjoy while we're here. And from that we get the fancy—and a fancy is so much finer than a fact—that when we get all through here and are tucked away for what we think may be the long silence, that it may not be a silence, after all; that it may be just waking up for another springtime, somewhere else.

The Jeanne D'Arc and the White Bird for which they are searching.

You know, I like to think that. I don't hold with any of these old theologies—they don't fit my case, somehow. I can't make any of them match up with what I know of life, with what I fancy about what comes after this life. But because I'm full of fancies about this and that, I sort of figure things out my own way. And I figure that human life can't be so far different from natural life—the life of the woods and the grass and the little growing things. We're all made of practically the same stuff, you know. So isn't it reasonable, to fancy that we keep right on having our springtimes, too; that we seem to die here, just as the grass dies, but that we experience a rebirth somewhere else?

These boys Nungesser and Coli, now—I've been thinking about them a lot. Sidney Cotton and John McPhail and I have flown over quite a bit of this country—thanks to the generosity of that philanthropic patron of flying, Daniel Guggenheim. It is now six weeks since their flight ended—here or in Labrador or in the Atlantic. And if they landed here I do not see how they could have supported life in the desolate uninhabited regions for six long weeks. Away from the coast and from the railroad there are no inhabitants. Even the trappers who live in the woods during the winter have long been out. The interior of the country is vacant. It is not a question of sparsely settled country—it is a question of absolute barrenness. These men had no equipment with which to support life in the wilds. They had a fishing-line, but no gun; and I for one—and all natives with whom I have talked support my opinion—do not believe that a town man could retain life in the Newfoundland wilderness only by the aid of a fishing-line. On foggy days I have tried fishing myself—and if I had been forced to exist on what I caught I would have starved. True, this is a wonderful fishing country, but it must be remembered that salmon and trout come up the rivers only in late spring or early summer. When Nungesser and Coli landed here—if they landed here—the fish were not in. They are not in yet. All that are in the brooks are small trout, and in the inland ponds there are few trout or none. Take such a country as the Placentia West country or the Burin Peninsula which we have covered. It is a country of bare rock, sparsely covered here and there with scrub spruce. There are many small ponds of coffee-colored water which certainly do not look like trout ponds, and the natives tell me that no food fish inhabit those ponds. As for game in the barren lands, caribou live in certain parts in the winter, migrating to other parts in the spring. There are a few hares, which might be snared by someone who knew how to snare them; and there are partridges which also might be snared. But one fishing line and a few hooks are inadequate equipment, although a native hunter doubtless could snare many small animals and ground-walking birds with a line.

No, the more I think about it, and the further I fly, the more firmly am I convinced that if Nungesser and Coli landed in Newfoundland that they are—well, you know how I feel about that. I just think there's a beautiful springtime some place for all

(Continued on page 107)

The Greatest Name in Rubber

Charles Goodyear, from a contemporary portrait

He walked the streets in downpouring rain in a strange garment of rubberized cloth.
He met the jeers of the world with a faith that neither disaster nor seeming disgrace could conquer.
He laid upon the altar of his work all the dear things of life—health, family, friends, fortune, happiness.
He was cast into prison for debt.
He felt himself "appointed of God."
He discovered the vulcanization of rubber.
His name was Charles Goodyear.

IN the immense and farflung industrial structure that is Goodyear today, an army of workers labors to enlarge Charles Goodyear's discovery.

In cities that he never saw—quite possibly of which he could not even dream—and in an enterprise he did not found, his spirit abides where his name finds greatest honor.

With every passing year, the name of Goodyear rises higher, clearer.

Deservedly the greatest name in rubber in the beginning, through the work of the man, it is today no less deservedly the greatest name in rubber through the work of the institution which followed the path he pioneered.

The name Goodyear is greatest in invention.

Look through the annals of the rubber industry's achievements, and on every important page for a quarter-century you will find record of Goodyear the institution's contribution to the art.

Goodyear invented the present straight-side tire. Goodyear perfected the principle of cord tire construction underlying the high-mileage performance of automobile tires today.

Goodyear ingenuity fashioned the machines necessary to the production of this new construction.

Goodyear devised the All-Weather Tread, for maximum safety, traction, wear.

Goodyear pioneered the successful pneumatic cord truck tire.

Goodyear originated the Plant Analysis Plan of specifying rubber mechanical goods to the uses of industry.

Goodyear provided the indispensable rubber equipment for aeronautics in America, and itself established record after record in air navigation.

Goodyear developed SUPERTWIST, the extra-elastic, extra-durable cord fabric essential to the modern low-pressure tire.

Goodyear has just now announced the tractive, slow-wearing new Goodyear balloon tire with the new-type All-Weather Tread.

The name Goodyear is greatest in sales.

The measure of value in rubber may accurately be gauged by volume of sales, sustained public demand being the evidence of merit.

More people ride on Goodyear Tires than on any other kind.

More people walk on Goodyear rubber heels than on any other kind.

More Goodyear rubber conveyor belting is used in industry than any other kind.

More Goodyear rubber equipment is supplied to commercial aviation and for national aeronautical defense than any other kind.

More Goodyear Tires—many millions more—have been made and placed in the service of motorists than any other kind.

More rubber is used by Goodyear—nearly one-seventh of all the crude rubber produced annually on the earth, almost 50% more than is used by any other manufacturer.

The name Goodyear is greatest in service.

There is in the Goodyear business method a fixed principle of the greatest service to the greatest number.

With the same care that it builds into its products the greatest possible value, Goodyear has provided the means to help users get all that value out.

It has covered the world with a network of branches, depots and dealer service stations for the prompt supply and expert servicing of Goodyear wares.

It has pledged its selected retail outlets to give the skilled assistance to owners that results in the enjoyment of the last ounce of usefulness built into the Goodyear product.

The name Goodyear is greatest in usefulness.

It is a fair statement to say that none of Goodyear's success has come to Goodyear unearned.

This is a young company—eager, alert, forward-looking—one of the youngest although it is the greatest rubber company of the world.

It has come along no royal road in its march to decisive leadership, but often through trial and travail like that which Charles Goodyear himself endured.

But it has had his conquering spirit in its heart.

And it has had the devoted service of thousands on thousands of loyal men who respond to that spirit.

And it has had the trust and good-will of the millions of people who have tested its work and word and found them worthy.

It will keep all these, because it knows whereof they spring.

In the beginning, by force of discovery, Goodyear was the greatest name in rubber.

By force of usefulness, to its own and to all people, Goodyear is the greatest name in rubber today.

GOODYEAR

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TRANSOCEANIC FLYING

By Giuseppe Mario Bellanca

Designer of the "Columbia" which broke the non-stop distance record—Roosevelt Field, New York to Eisleben, Germany, 3923 miles, June 4-6, 1927

THREE factors must be considered in regular transoceanic flying service—safety, comfort and profit. Unless airliners are made safe and comfortable they will not be patronized, and unless they are patronized there will be no profit. Hence the three factors are inextricably bound together.

In the construction of any type of aircraft the weight is made as light as the strength will permit. The transatlantic plane that I believe to be most suitable for this service would weigh about 6 tons, and carry a load of about 11,000 pounds of fuel, sufficient for a flight of 2,220 miles. Forty persons on board, having an average weight of 170 pounds with 30 pounds of baggage each, would add 8,000 pounds more to the load. Another 600 pounds would be added for food, drinking water and other necessities, making a total weight to be lifted of 31,000 pounds or about 15 tons. Such a machine would cost about $100,000.

© P. & A. Photo.

Bellanca hears the news of Chamberlin's successful flight.

It seems to me that, in the beginning of transatlantic flying at least, we will be compelled to use a type of craft that can alight on water—seaplane or flying boat. It will be a combination monoplane and biplane, or "sesquiplane". The main load will be carried by the upper duralumin wings which will have a span of 130 feet. The hull will be all duralumin with round portholes in the sides. The upper wings will be braced by two pairs of inclined struts arranged in tandem on each side, to the lower surfaces of which pontoons will be attached. Every exposed surface will be streamlined. The engines will develop 2,000 horsepower, giving a cruising speed of about 125 miles per hour.

In the hull of the airliner will be accommodations for 34 passengers, a pilot, a navigator, 2 engineers and 2 stewards. No sleeping quarters need be provided for this particular machine, as it will be used for the 1,100-mile hop from New York to Newfoundland or the 900-mile trip from the Azores to Spain in daylight. The night planes that will fly the long stretch of 1,400 miles between Newfoundland and the Azores will have sleeping berths which can be converted into seats when desired. All the comforts of a railway train can be provided. Mufflers will reduce the roar of the engines; insulating material around the cabins will render them practically sound proof.

The necessary instruments will be installed in the pilot's quarters at the bow—an inclinometer, bank and turn indicator, an aneroid barometer, an earth inductor compass, a magnetic compass and others. But the chief navigation, especially in stormy weather, will be done by the navigator in his special compartment in the bow. His is an even harder task than the navigator of an ocean liner; his calculations must be more accurate and in less time. He will use the sextant to determine latitude and longitude and make his calculations with the aid of a Nautical Almanac. He will plot the course on one chart and the weather on another by means of the messages sent via radio.

Within the next five years I feel sure that a special meteorological service will be organized for transatlantic flying. The nations on both sides of the ocean will create an international weather service and maintain meteorological patrols on the high seas and radio weather reports. Searchlights and other visible beacons will also play their part in the simplification of navigaton.

Although it is feasible to fly between Europe and America without a stop, as the exploits of Lindbergh and Chamberlin have proved, and although this must be the goal that the designing engineer will ever keep in view, the machine of the future will not attempt to transport its passengers across the Atlantic without alighting on the way—not because the machine cannot stand the strain or the motor is uncertain, but because passenger-carrying must be profitable if it is to take its place among the regular means of long-distance transportation.

Gasoline pays no fares, but passengers do. Since we must look to passenger money for our profit it follows that the gasoline load must be reduced. The gasoline load can be lowered, so that more fare-paying passengers can be carried, only if stops are made on the way to and from Europe. For this reason it will be necessary, in the beginning at least, to follow the New York-Newfoundland-Azores-Europe route.

The distance from New York to Newfoundland is approximately 1,100 miles; from Newfoundland to the Azores, 1,400 miles; and from the Azores to Europe from 900 to 1,200 miles and more, depending on the destination. At each of these points fuel stations must be established. Airplanes will travel from station to station and will carry perhaps 50 per cent more fuel than is actually required for the journey to allow for such contingencies as fog, headwinds and bad weather.

As I conceive transatlantic flying of the immediate future an airplane will not refuel and continue on its transatlantic flight. Passengers will change machines at a fuel station, not because the machine in which they set out is incapable of continuing to Europe, but for the reason that each route will become the specialty of a group of trained pilots and navigators.

Just as passenger liners are not guided into harbors by their captains but by pilot-specialists who know the significance of every ripple, so transatlantic airplanes will be entrusted to highly trained, skillful officers who know the meteorological conditions that must be faced from Newfoundland to the Azores, and from there to Europe.

Who Will Be the Next?

Lindbergh, Chamberlin, Byrd, Noville, Acosta and Balchen, Hegenberger and Maitland—new names on the pages of fame! Whose name next week or next year?

Training and careful preparation, combined with grit and courage made possible their remarkable record flights. Who will follow to fame and fortune?

Training gets men ahead in Aviation

At home, in your spare time, you can learn the fundamentals of Aviation—and start yourself on the way to large earnings

THE recent growth of Aviation is significant. It indicates the kind of expansion that means solidity and permanence—real *commercial* expansion. Mail, express and freight lines are beginning; great factories are building planes by hundreds for pleasure, business and air transportation.

The industry is growing so fast that there is a positive hunger for trained men in all its branches. *But without training, no man is wanted.*

Aviation Institute can give you needed training — all the necessary knowledge. It is easily acquired in spare time, at home. All you need is a desire to learn.

Lieut. Walter Hinton

Lieut. Walter Hinton, of N.C.4 fame, and his staff of experts will guide your instruction from beginning to end. There are many positions open as mail pilots, commercial flyers, instructors, plenty of well paid jobs as inspectors, riggers and mechanics on the field, and any amount of openings in the different factories. But aircraft manufacturers must have trained men. There must be no mistake in the construction of a plane.

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DETERMINATION OF AVAILABLE HORSE POWER

By Dr. Michael Watter

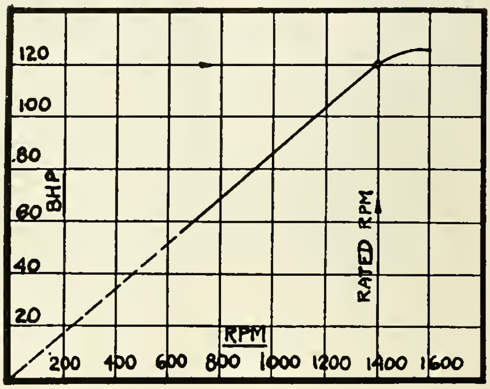
IN developing a new airplane design it is important to be able to determine as closely as possible the flying characteristics of the new project. This note deals with the problem of horse power available curve where the designer does not know the characteristics of the propeller and has no power curve of the engine. The character of such a performance estimate is apparently preliminary but with the proper choice of average curves it may lead to results differing but little from a final estimate of performance.

There are several ways of obtaining the horse power available curve. The method used here is preferable because of its simplicity and clearness. In order to know the horse power available at any speed one must know the number of revolutions per minute of the propeller, the brake horse power at this r.p.m. and the corresponding propeller efficiency. The available power is then given simply by the product

b.h.p. = e where

e is the propeller efficiency.

For all practical purposes it is sufficiently close to take the brake horse power proportional to the number of r.p.m., that is, in case of absence of power curve, to simply draw a straight line through b.h.p. at rated r.p.m. and origin of coördinates.



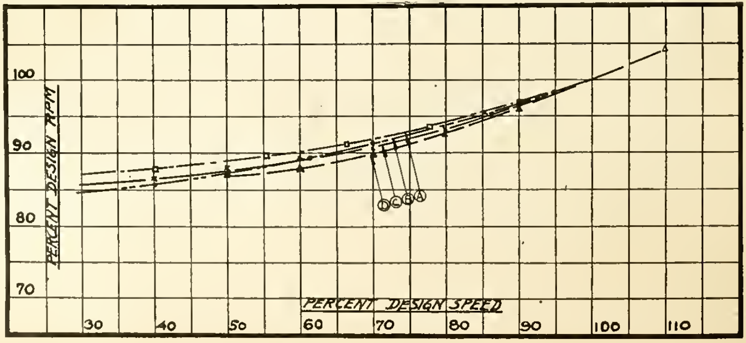
Typical b.h.p. curve of an aircraft engine.

In order to coördinate the functioning of the propeller with the engine it is necessary to estimate the variation of r.p.m. with the speed of advance of the airplane. There are reproduced here a few of the curves and their sources are given in Table 1. They are given in per cent of design r.p.m. against per cent of design speed.

Table 1. Variation of r. p. m. against per cent of design speed

	A	B	C	D	
Source	Bairstow	Verduzio (Italian)	German Various	A. S. I. C. No. 505	Average
% Design Speed	% DESIGN r.p.m.				
120				109	109
110				104.2	104.2
100	100	100	100	100	100
90	96.8	96.8	96.5	96	96.5
80	94	94	93	92.5	93.4
70	91.8	91.5	90.5	89.8	90.8
60	90	89.3	89.1	88	89.1
50	89	87.5	88	87	87.8
40	87.8	86	86.3	87	86.7

While the variation of r.p.m. with speed is unquestionably a function of the type of propeller used it is interesting to note the close agreement of the observed variation. The average curve will sufficiently approximate any case for a two bladed propeller but can be modified proportionally if more specific information, even for one point, is obtainable. Extreme cases such as special climb or pure speed propeller would present individual problems but the variation is not more than 3 per cent.



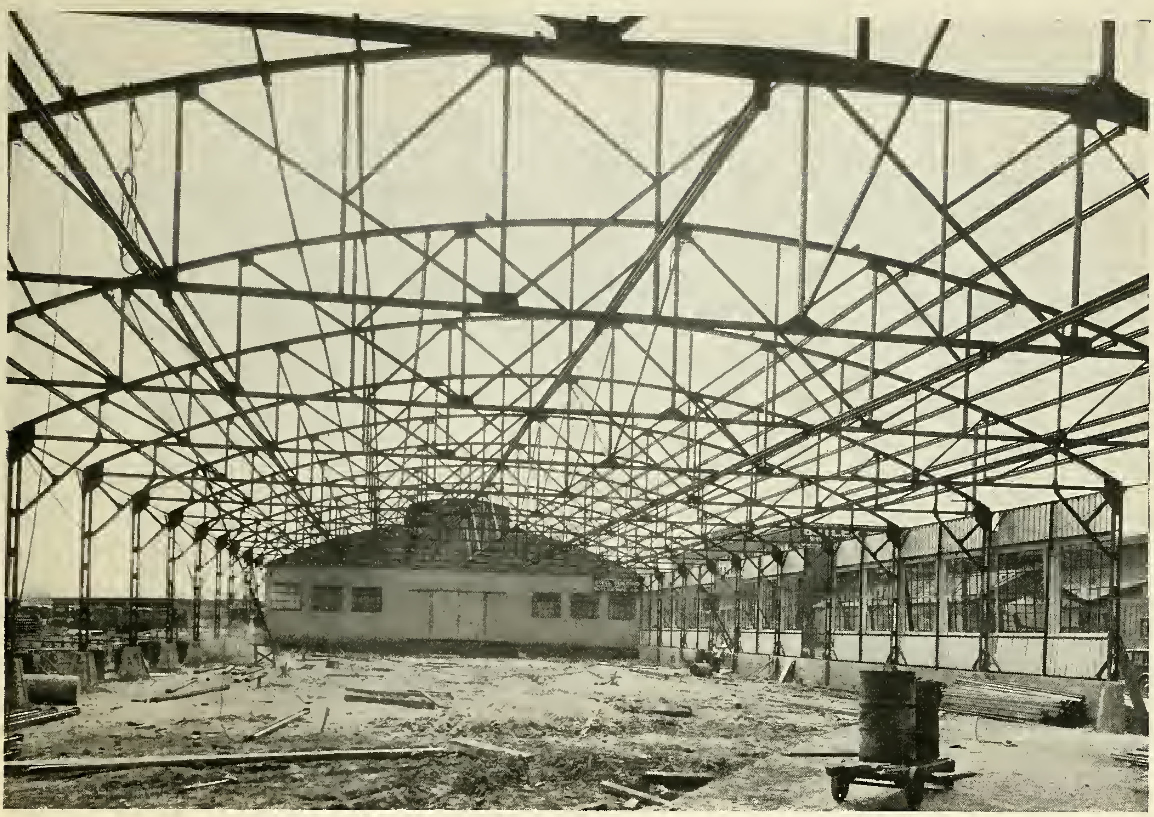
As a next step it is necessary to obtain the efficiency of the propeller at various speeds. A plot of propeller efficiency versus percent of design (V)/ (ND), in conjunction with the diagram No. 1 completes the characteristics of the engine-propeller group at sea level. Knowing the ratio of r.p.m. to design r.p.m., the propeller efficiency is readily plotted against the ratio of V/V design.

The two last columns are in a very good agreement although their sources are widely different. Diehl's data is based on numerous tests and an account of it is given in the National Advisory Committee's Technical Report Number 168.

The variation suggested by Diehl was found to give excellent results for two bladed propellers and it always was in agreement with calculated propeller efficiency curves. Indirectly it was often checked by results of actual flight tests.

The most interesting and uncertain part of the behavior of the engine-propeller group is its performance at altitude. The horse power of an engine depends on the mean pressure in the cylinders and r.p.m. of the crankshaft, while the mean pressure is a function of compression ratio and amount of mixture. Assuming that the carburator is provided with altitude control the ratio of fuel to air can be kept approximately constant although in practice it is preferred to slightly enrich the mixture with altitude. The volumetric efficiency however is a function of pressure temperature and r.p.m. The mechanical losses are practically independent of altitude and vary with r.p.m. Therefore, the decrease in horse power with altitude is more rapid than decrease in density and depends on the carburation. It is individual with the engine and eight curves reproduced in a diagram below table 3 show the difference between the assumptions used in various countries.

In France and Italy the drop in b.h.p. is taken proportionally to pressure variation according to Radeaux. Some designers however prefer an average law between pressure and density; this law of variation closely checks the test made in the altitude chamber and given in NACA Technical Report No. 45. The empirical law of power variation as $(d/do)^{1.1}$, where *d* and *do* are density at altitude



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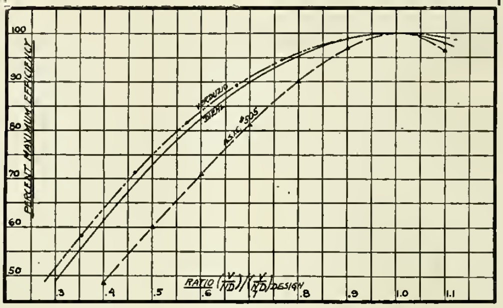
and sea level respectively, is very close to this curve as also is the law of power drop suggested by Bairstow:

$$\frac{(\text{bhp})_{sl}}{(\text{bhp})_a} = \frac{r-.12}{.88} ,$$

where r is the relative density. The method of calculating power at altitude given in NACA Technical Report No. 101 and based on T.R. No. 45 gives a curve which is in close agreement with the curve suggested by Diehl (NACA T.R. No. 171) for the case when the engine is not specially adjusted for altitude. From our experience this curve can be used for the case of an ordinary engine, while the case of special altitude correction it is better to use the curve based on the tests in an altitude chamber.

Table 2. Variation of propeller efficiency against per cent of design V/ND

Source % of (V/ND) design	A. S. I. C. No. 505	Verduzio (Italian)	Diehl NACAT.RNo.168
	% of maximum propeller efficiency		
120	84.0	....	92.5
110	96.4	....	98.0
100	100	100	100
90	97.0	99.0	99.0
80	90.0	95.8	95.0
70	81.3	90.8	90.0
60	71.2	84.0	82.8
50	60.0	75.0	73.0
40	48.8	63.8	61.9



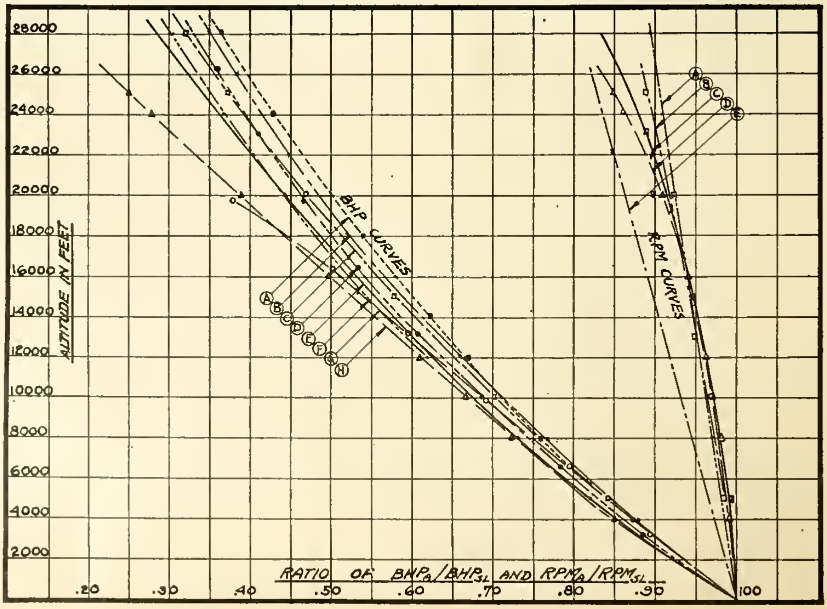
The set of curves reproduced under table 3 gives the b.h.p. variation at constant r.p.m. and in order to complete information the decrease in r.p.m. with altitude must be known. On the same diagram is reproduced a set of curves from the data published by U. S. Army, Diehl, Bairstow, Rafaelli and by German engineers.

Table 3. Variation of B. H. P. of an engine with altitude at constant R. P. M.

Source	A	B	C	D	E	F	G	H
	(d)/(do) 1.1	NACA T.R.-45	Bair.	French	NACA TIR-101	Diehl	Ger.	ASIC No.505
Alt.	(b.h.p. at altitude in percent of b.h.p. sea level)							
0	100	100	100	100	100	100	100	100
2000	93.4	94.0	93.2	92.7	92.2	92.6	93.5	92.2
4000	87.1	88.0	87.2	86.2	85.2	85.7	87.2	85.2
6000	81.6	82.0	81.0	80.0	78.8	79.2	81.0	78.8
8000	76.0	77.0	75.8	74.5	73.0	73.1	74.8	72.8
10000	71.2	71.0	70.3	69.0	68.6	67.4	68.8	66.9
12000	66.9	66.0	65.1	63.8	62.5	62.0	62.8	61.0
14000	62.4	61.5	60.4	58.5	57.8	57.1	57.2	55.5
16000	58.2	58.0	55.7	54.0	53.1	52.3	51.2	50.0
18000	54.1	52.0	51.3	50.0	48.7	48.1	44.3	44.0
20000	50.4	49.0	47.0	46.3	44.3	44.0	37.0	38.8
22000	46.6	45.0	42.7	42.8	40.2	40.3	....	33.3
24000	43.1	41.0	39.0	39.5	36.3	36.8	....	28.0
26000	39.8	38.5	35.6	36.5	32.3	33.6	....	....
28000	36.5	35.0	32.3	33.0	28.6	30.6	....	...

Table 4. Variation of R. P. M. with altitude

Source	A	B	C	D	E
	Diehl	German	Bairstow	A. S. I. C. No. 505	Rafaelli (Italian)
Altitude	r.p.m. at altitude in per cent of r.p.m. sea level				
0	100	100	100	100	100
2000	99.3	99.5	99.5	99.8	98.7
4000	98.5	99.0	98.9	99.5	97.3
6000	97.8	98.4	98.3	98.8	96.0
8000	97.1	97.5	97.5	98.0	94.6
10000	96.3	96.5	96.7	97.3	93.3
12000	95.7	95.8	95.7	96.3	91.8
14000	94.8	95.0	95.0	95.4	90.4
16000	94.1	94.1	94.1	94.1	89.2
18000	93.2	92.0	92.8	92.8	87.8
20000	92.4	91.0	92.0	91.0	86.3
22000	91.8	89.8	90.0	86.7	85.0
24000	91.0	88.5	88.2	86.3	....
26000	90.2	....	86.0	83.7	....



In connection with previous curves, curves A and B always gave very accurate results, but up to 20,000 the difference between various curves is very small. Rafaelli's curve gives a too rapid decrease in r.p.m. and is not confirmed by our tests. Although this method is intended for an approximate and preliminary analyses the results will be found sufficiently accurate to evaluate the flying characteristics of a new design.

For the convenience of the reader the curves are supplemented with tables to facilitate the use of this information.

Since the altitude performance of an airplane engine depends very much on the carburation, presence of an air intake heater, etc., the predicted altitude performance may vary somewhat but once one has learned the peculiarities of the engine or engines used it would surprise a layman how closely it is possible to predict the altitude performance of an airplane.

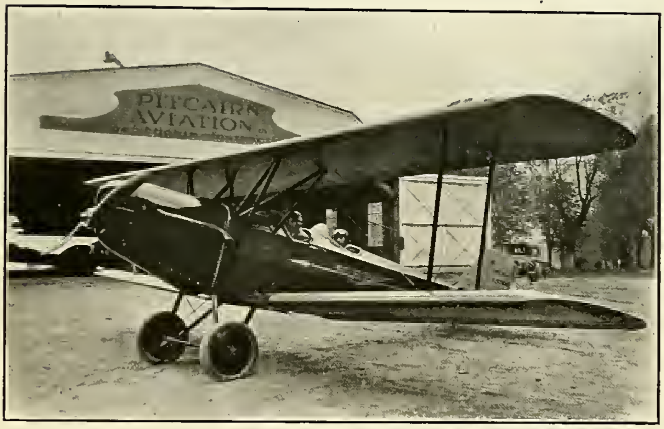
It would be possible now to combine the variation of the engine and propeller and obtain the variation with altitude of the engine propeller unit.

It will be found useful, however, to observe the variation of the power separately and combine it with changed conditions of propeller.

The method of determination of horse power available curve as given here is purely preliminary and is based on averages observed and verified in practice. A more thorough analysis would require experimental curves of the engine and tests or calculations of the specific propeller intended for use.

The curves recommended here always gave such a close agreement with results of flight test that often designers will not require a more elaborate investigation.

PITCAIRN PLANES



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"LEARN TO FLY"

(Continued from the June issue)

Synopses of United States Flight Training Opportunities

CURTISS FLYING SCHOOL

Curtiss Field, Garden City, L. I., N. Y.

(New Flying Course Offered)

IN coöperation with the U. S. Army Air Corps, Curtiss Flying Service, Inc., of Garden City, N. Y., has developed a new flying course, which promises to be exceptionally attractive to men who expect to follow flying as a profession.

In the May issue of AERO DIGEST a synopsis of other courses of instruction at the Curtiss Flying School is given.

The usual short flying course, as offered by a number of excellent schools throughout the country, has its limitations in that, while it teaches men to fly, it does not give them sufficient solo practice to enable them to qualify for commercial pilots' positions. This shortcoming is particularly apparent under the new Department of Commerce regulations, which very wisely require a minimum of fifty hours of solo flying for any class of pilot's license, and 200 hours for a transport pilot's license. In order to get the necessary amount of practice in the past, students have been forced either to pay for additional instruction, to buy their own ship to practice on, or to obtain such flying time as they could in return for their service as mechanics and helpers. The first two methods often presented financial difficulties, and the latter of course was limited in application. Curtiss Flying Service, therefore, has been searching for some method of training students by which they could get the necessary solo experience quickly and reasonably.

Meanwhile, the Air Corps of the Army has been faced with a very serious problem—that of obtaining trained pilots for the Air Corps Reserve. Regular Army pilots are obtained from the Government training school in Texas, but at present the number of graduates is not sufficient to take care of the increased quota of officers provided for under the new Army Air Plan. This means that no new pilots are being trained for the second line of defense, the Air Corps Reserve. This is a very vital difficulty, inasmuch as the present Reserve is composed for the most part of men who were trained during the war, and who will probably be too old for flying in the next war.

To meet these problems, a plan has been worked out, which apparently has considerable merit. The general idea is for commercial schools to give a limited number of students sufficient flying training to qualify them for Reserve pilots' rating in the Air Corps Reserve. This can be done without unreasonable expense to the student. After passing the necessary physical, mental and flying tests, he is commissioned in the Reserve, and is permitted to fly Air Corps planes, at Government expense, for a certain number of hours each month. In return, he is subject to call by the Government in time of emergency. By this method, the student, within a reasonable time, will have sufficient flying experience to qualify him for a commercial license. He can support himself by other means during this time, and the cost of the preliminary instruction is the only expense.

Curtiss Flying Service, Inc. is now ready to train a limited number of students under this plan. It is estimated that the time required for a student to be able to pass his flying tests will be from twenty to twenty-five hours and the following rates will apply: first ten hours, $30 per hour, next fifteen hours, $20 per hour. Because of the experimental nature of the course, the Curtiss Company will give students who need more than twenty-five hours of instruction to qualify, the additional instruction without extra charge. This rule, of course, is subject to change as experience warrants.

For the time being, enrollment will be limited to R. O. T. C. graduates or men with college educations or the equivalent.

WYOMING AIRWAYS FLYING SCHOOL

Caspar, Wyoming

THE course includes both ground school work and air training. A flat rate of $200 is charged for the complete course, with a guarantee to the student that he will be able to fly and pass the Department of Commerce's examinations and tests. If at the end of five hours the student is believed to be hopelessly unable to learn to fly, he will be charged only the actual cost of his instructions up to that time.

DAVIS AND FELIX AIRWAYS SCHOOL

Battle Creek, Michigan

THE average cost of instruction is $165 for the flying course, with ground course optional.

The school has been in operation for three months. Living facilities for students are good.

Four ships are used for instruction—two Wacos, one Swallow and one Jenny.

Twenty-five students are now taking the course with two instructors.

The level, square field comprising 138 acres is located two miles west of Battle Creek.

Davis and Felix Airways also operates a commercial flying service.

DYCER AIRPORT FLYING SCHOOL

Los Angeles, California

THE $200 student course includes the necessary flying time to solo, with one hour solo time; aerodynamics; theory of flight; airplane construction and overhaul; motor overhaul; air navigation; elements of meteorology and practical servicing details.

An average of twenty-five students take the course at one time, with four instructors. Fifty students have been trained since the school starteed in March, 1923.

Living quarters and restaurants are in the immediate vicinity.

The equipment consists of: one Junkers, two JN4Ds, one J1 Standard, one Dycer Sport, one Dycer special built OX5, one special built Whirlwind job.

Several mechanics are employed at the field regularly and several students working out instruction courses.

Dycer Airport is situated on a one-mile square tract of level land, with emergency landing fields in all directions. Borders on Western Avenue, a main artery of Los Angeles, about nine miles from the business section and two miles from the residential section of Los Angeles. A bus line connects with the city. It is situated southeast of Los Angeles and five miles from the Pacific Ocean. On the field is a 12 x 16 office building, a 30 x 40 work shop and stock room and two hangars are to be erected.

The Dycer Airport Company's activities, in addition to instruction, consists of general commercial flying, construction and repair, purchase and sale of planes and parts.

(Continued on page 54)

First class of the Davis and Felix Flying School. Photograph taken April 4th, 1927, at opening of the school.

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Mark X here—and enclose $10 enrollment fee if you desire to start at once. You will receive the first Lessons by return mail.

Students, instructors and operators of the Richmond Airport Flying School.

Richmond Airport Flying School

Richmond, Indiana

INSTRUCTING is incidental to the regular commercial business, the chief stress being laid on actual piloting. The instruction is chiefly for sport purposes, and does not claim to graduate a man so that he will be a qualified pilot-mechanic-rigger who could be of immediate use to a commercial air service.

Eight students have taken the course: two of them have built their own sport planes.

OX5 Standards have been used in the past, but this year they intend to have a modern design OX ship, for which they can have the dealership or sub-dealership.

The field is 1½ miles directly north of the Pennsylvania Railroad Passenger Station, with good approaches from all directions except NW. The four ship (cement floor), black roof, red wall hangar is easily distinguishable from the air; white circle is in the center of the field; telephone at the hangar and an automobile at all times except winter, for connecting with town.

Richmond Airport Company builds planes and runs a commercial flying service.

Michigan Airways Flying School

East Lansing, Michigan

THE course consists of flying and ground instruction, including motor trouble and cross-country flying information. Twelve hours are required to complete the course at $15 per hour. The school has been in operation six years.

Living facilities may be obtained at College City, one mile away, which has all kinds of living facilities.

Six ships are used of the following types—Jenny, Standard, Thomas Morse and Waco.

Fourteen students took the course last year; seventeen have completed it. Two instructors are employed.

The field is located one mile east of East Lansing, on M 16 to Detroit; hangar is on south side of road; field lies on both sides of road. Flying conditions are good all the year because of gravel soil.

The school is now working with the Lansing High School, taking students for airplane and motor mechanics, under apprentice rules of the school—one week in the school rooms and one week on the field. Their work is considered fair compensation for the time given them for instruction.

The Michigan Airways have the Curtiss sales agency and do commercial flying and aerial photography.

Muncie Flying School

Muncie, Indiana

THE entire course of ground and flying instruction is given for $250. The school has been operated for two years, during which time 15 students have been trained.

Living facilities for students may be obtained in Muncie, one and one-half miles from the field, connected by street car line.

Six ships are used for training of the following types: Swallow, Waco, JN4D and J1 Standard. Throughout the year an average of nine students take the course. Three instructors are employed.

The 120-acre flying field is one-quarter mile square. The Muncie Aerial Company operators of the school, also do commercial flying.

N. W. Flying School

Linton, North Dakota

STUDENTS are taught through actual experience—by accompanying the company's pilots on "barn-storming" and commercial trips, overhauling motors and rebuilding ships. Individual instruction in actual flying is given.

Two Canucks are used for training and a 3-place Hisso Standard for cross-country work and passenger work.

There are good hotels, restaurants and boarding houses nearby or students can sleep in tents on the field.

The flying field is 1½ miles southeast of the city, opposite Seeman Park. There are very few obstructions and emergency landing fields on every side. The company also has three quarter sections (480 acres), which they use for practice landings, five miles west, on a school section.

The N. W. Aircraft Company, operators of this school, do commercial flying, including passenger carrying at fairs and rodeos.

Montana Aviation School

Butte, Montana

THIS school was opened on April 15, 1927. The Butte National Airport, from which the school operates, is the highest in the country, surrounded by mountains on all sides, ranging from 7,000 feet to 10,600 feet above sea level, with air currents that hit from three different directions from three canyons. The Continental Divide, or Pass over same, is twelve miles from the field.

Students learning to handle planes under such conditions, although it may take longer to learn, should be able to pilot under many difficult conditions. Hisso Standards, 150-180 h.p., are used.

Students are not encouraged to think that flight training at this altitude is easy, but with time and patience it is just as safe as anywhere.

Commercial air service is also engaged in by the Butte National Air Port Company.

Royle-Rose Flying School

Oakland, California

AVERAGE cost of instruction is about $300. This consists of practical flying enabling students to get a Private pilot's license; one lecture each week on aerodynamics; practical work in assembling new planes as well as rigging and general motor work. Motion pictures are used with the lectures showing the student the right and wrong way of making turns, landings, take-offs, etc.

The school has been in operation since November, 1926.

Living facilities for students are very good. They can live either one or two blocks from the aerodrome or in town at a first class hotel, 17 minutes from field with transportation furnished.

One JN4D and two 1927 Swallows are used with two more ships on order. Two instructors are employed, both of whom are ex-army and ex-air mail pilots, now in Army Reserve Corps, A. C. Thirteen students are training at this time.

The flying field is the new Oakland Airport, just purchased, which will be one of the finest in America. It is 17 minutes from the center of Oakland and has every natural advantage that a flying field should have as well as facilities for seeaplanes.

Royle-Rose Airlines company also does commercial flying and distributes Swallow planes.

(*Continued on page* 56)

Royle-Rose Flying School pupils and instructors at Oakland Airport.

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Adventure..
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Aviation is growing so swiftly that one can hardly keep track of all the astonishing new developments. Air-mail routes have just been extended to form a vast aerial network over the entire U. S. Airlines and airplane factories are springing up all over the country. Men like Henry Ford are investing millions in the future of commercial Aeronautics in America! The possibilities are so tremendous that they stagger imagination!

PICK YOUR JOB

Airplane Instructor
Airplane Engineer
Airplane Repairman
Airplane Assembler
Airplane Mechanician
Airplane Inspector
Airplane Builder
Airplane Salesman
Exhibition Manager
Airplane Contractor
Airplane Motor Expert
Airplane Designer

Big Future

Everything is set for the greatest boom in history. The fortunes that came out of the automobile industry and out of motion pictures will be nothing compared to the fortunes that will come out of aviation! There is just one thing holding it up — lack of trained men! Even in the beginning thousands will be needed—and generously paid. The opportunities open to them cannot be overestimated. Those who qualify quickly will find themselves on the road to undreamed of money—success—popularity—and prominence!

Get into this thrilling profession at once while the field is new and uncrowded. Now—by a unique new plan—you can quickly secure the basic training for one of these wonderful high salaried jobs, at home, in spare time. Experts will teach you the secrets—give you all the inside facts that are essential to your success. And, the study of Aviation is almost as fascinating as the actual work itself. Every lesson is chock-full of interest—and so absorbing that you actually forget you are studying. But best of all are the ultimate rewards you are fitting yourself to gain!

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Send the coupon for our new, free book, just out—"Opportunities in the Airplane Industry." It is vitally interesting, reads like a romance and tells you things about this astonishing profession you never even dreamed of. This book is so fascinating it could easily sell for a dollar. We offer a limited number FREE. Write for yours today.

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INTERNATIONAL FLYING SERVICE

Love Field, Dallas, Texas

THE following courses are offered by this school:

Transport Pilot's Course, requiring from six to nine months, which includes ten hours dual control with experienced instructor; ten hours solo; ten hours acrobatics with instructor; fifteen hours solo acrobatics (up to this point the student's training has been on Curtiss JN4D type airplanes); five hours dual instruction on Stinson and Standard J1 airplanes; thirty hours cross-country flights; ten hours dual control with instructor in De Havilland planes; thirty-five hours general solo flight work on all type planes. A total of 125 hours in the air and sufficient to meet the Department of Commerce requirements for a Transport Pilot's license. Ground work includes practical work in the actual construction and assembling of airplanes; rigging and applied aerodynamics; practical engine work in repair and overhaul of the school's shops. The theory course includes elementary aerodynamics and aerodonetics; airplane construction and design; performance calculations, stress and strain analyses; theory of internal combustion engines and various designs; meteorology; government air laws and air traffic regulations; lighter-than-aircraft; glider and glider construction. Tuition $1,500.

Industrial Pilot's Course, sixty-five hours of actual flying instruction, during which time the student is trained until he is capable of obtaining the Government Industrial Pilot's license. It generally takes from three to five months to complete and includes the following: Ten hours dual control with instructor; fifteen hours solo flights around field; three hours acrobatics with instructor, five hours acrobatics—solo; two hours dual instruction on Standard J1 and Stinson planes; fifteen hours cross-country flying; five hours, de Havilland; ten hours of general test flying; ground work; theory of flight; air law and traffic regulations; elementary aeronautical meteorology. Tuition $750.

Private Pilot's Course which guarantees the student to become sufficiently expert to obtain a Government Private Pilot's license. It includes: Ten hours dual control with instructor; five hours solo flights; two hours acrobatics with instructor; one hour acrobatics—solo; two hours cross-country flight; ground work; some theory, air traffic regulations; elementary meteorology. This course require about six weeks. Tuition $250.

Solo Course, training students to fly solo including one-half hour solo flight, practical construction, assembly rigging, engine repair and overhaul. This course can be finished in two to three weeks. Tuition $100.

Mechanic's Home Study Course, fitting students to enter flying schools with an elementary and fundamental knowledge of the science of aviation. Students completing this course with an average of 80 per cent or better may go to the company's shops and take the complete practical ground and mechanical course without further expense. It takes three months of intensive study to complete this home course. At the close of the course a general examination is held covering the entire range of subjects included in the course. Tuition $25.

A limited number of students can be furnished with employment while learning.

Curtiss, Stinson, Travel Air, DeHavilland and Standard planes are used. Four instructors are employed.

Love Field, the Dallas municipal field, is located four miles northwest of the edge of Dallas; good roads to Dallas; telephone on field. Good living facilities may be obtained at Dallas. The company has its own shops and complete equipment.

A group of Mexican students at the Chicago Aeronautical School.

EDDIE MARTIN'S FLYING SCHOOL

Santa Ana, California

THE average cost of instruction whether taken by the course or lesson is $200. A full course guarantees a student to learn to fly, do a tail spin, side-slip, etc.

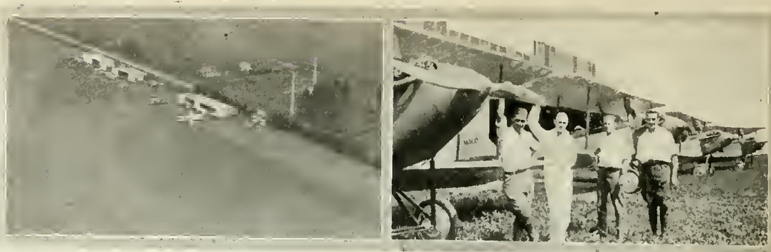
The school has been operating for four years. Jennies are used for training purposes. Three instructors are available at all times.

At the present time there are about fifteen students enrolled. During the past four years approximately seventy-five finished students have been trained, two of which are girls.

Students can get good room and board at $10 per week.

Eddie Martin's Airport is located just three miles due south of Santa Ana, on the main highway to Balboa and New Port Beach. The field is 1320 feet wide and 2000 feet long, the long way, into the prevailing wind, south west. Hangars, shops and real service are available.

Commercial flying service is also operated by Eddie Martin.



Monmouth Field and a few students of the Midwest Airways Flying School.

MIDWEST AIRWAYS FLYING SCHOOL

Monmouth, Illinois

THE flying course requires at least ten hours of actual flying. The Gosport system is used. Explanations are given the student through telephone helmets, the control of the plane being gradually entrusted to the student as he becomes competent. He is taught to make neat take-offs and landings under varying wind conditions, fly a straight course, make good turns, glides and spirals. The course, complete, costs $125 which includes ground instruction, the care and maintenance of both motors and airplanes, instruction in rigging, motor repairing, field management, theory of aviation, navigation, aerodynamics, and airplane construction. Additional flying time can be obtained for $12.50 an hour. Those who do not wish to take the complete course can obtain instruction for $15 per flying hour.

Students securing positions in one of Monmouth's factories or stores can take their flying instruction early in the morning, or late in the evening providing the weather is favorable, and also on Saturday afternoons and Sunday mornings. The school has been operating since 1921.

Students room at Y. M. C. A. with excellent restaurant at reasonable rates.

Waco's are used exclusively. Approximately 80 students have trained since 1921. Two instructors are employed.

The Monmouth field, until last year, was the headquarters of the Development Division of the United States Air Mail Service. It is level and hard in all weather; T-shaped 2000 x 2000; one mile from post office. There are three large hangars with gas, oil and supplies at all times. Transportation to and from the field is furnished without charge.

The Midwest Airways Corp. distributes Waco planes and operates commercial aerial service. *(To be continued in August)*

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LEARN to FLY

You Fly by Flying.

THE SWEENEY SYSTEM
of
Practical Airplane Mechanics

The Sweeney System first prepares a student by intensive practical work on motors, building, recovering wings, rigging and all details of construction, repairing and handling. This is called ground school work. To show you the quality of the men who teach you, look at Spencer and Wimer for instance. Spencer was an army pilot and has been teaching and doing commercial flying since 1917. Wimer is a college man, went overseas, was with the 1st Air Park as an observer, spent over 200 hours in the air and since the war has been with two big aircraft corporations.

Learn to Fly!

Aviation is no longer a mystery—no longer a hazard; no, it is a business, growing greater and more important; you can qualify as a mechanic, engineer, repair man, builder or a pilot opens up a world of opportunities for young men. The Sweeney System has no planes to sell, and sticks strictly to teaching both ground work and pilotage. Sweeney Airport is one of the best and safest fields in the U. S. All the resources of this **Million Dollar School** insure you the best, most practical instruction. Mechanics earn $50 to $150 a week. Flyers, up to $500.

The Sweeney System

is divided into two parts. **First:** You are thoroughly taught in the ground school. This fits you as an aviation mechanic. You can build your own plane and do anything required in aviation mechanics and construction and repairing when you have finished this work. You are thoroughly taught motors, etc., and work with thousands of dollars worth of new material, and all types of engines.

Secondly: After completing this work if you want to be a pilot you take ten hours of flying. Now when you understand that two to seven hours is all the average man needs to learn expert flying you will appreciate what ten hours in the air under skilled men will do for you.

On the ground 5 men are needed for one in the air, but if you want to become a pilot you easily master the work and can go into postal, government, or commercial work. Flyers are in demand, earning big money at fairs taking up passengers, etc. $5 for a 10 minute flight is pretty fine pay!

Send Name Today

for full details of this aviation mechanical course and photographs of planes and equipment actually used; also full information as to the commercial end of flying and opportunities for young men.

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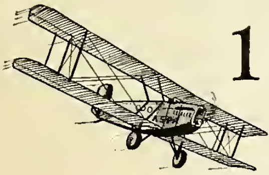

1,000,000 MEMBERS
by 1928

THE "ASPA" organized by twelve ex-service pilots at the Army and Navy Club, New York City in 1924; now numbers 10,000 active aviation boosters in all parts of the United States.

We want you with us in our endeavor to

"Make America Supreme in the Air"

Membership fee One Dollar, which covers the cost of membership card, literature and silver wings shown below.

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522 FIFTH AVENUE NEW YORK CITY

TECHNICAL DEPARTMENT

RADIO BEACONS

SIX aircraft radio beacon stations are now established or under construction. Two of these were established before the Department of Commerce entered this field of work. They are the station of the War Department at McCook Field and that of the Ford Motor Company at Dearborn, Mich. There is also a station being established at the Ford landing field in Chicago. Two others are the radio beacons which form part of the experimental aeronautics radio stations established by the Bureau of Standards at College Park, Md., and Bellefonte, Pa. Research and development work has been in progress at the College Park station for some months, and construction work was begun at the Bellefonte station during April. Besides serving as laboratories to determine the best forms of radio aids for the civil airways, these two stations will be available to render actual radio service to the commercial air lines operating through these points after July 1. These lines are, respectively, Pitcairn Aviation Company, operating the New York to Atlanta route, and the National Air Transport, Inc., operating the New York to Chicago route. A radio beacon station is also being installed at Hadley Field, using a system sponsored by the General Electric Company. It is expected the similar stations will be established by the department at various other points on the airways of the country.

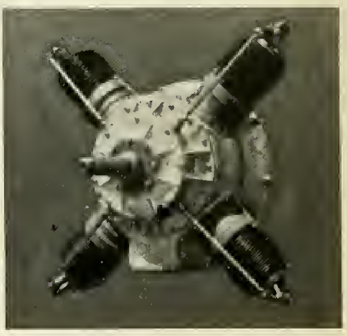
The radio aids to air navigation, which are incorporated in these stations, are three in number, viz., the directive radio beacon, the marker beacons, and radio telephony. The directive beacon sends out a special type of radio beam by which the pilots are able to follow the designated course in total darkness or fog. The marker beacons are small radio transmitting sets which are placed at intervals of about 25 miles along the route and supplement the directive beacon by serving as mileposts. The radio telephone transmitting station is used to inform the pilots of weather conditions, landing places, and other navigational facts. In both the Bellefonte and the College Park installations, the radio telephone transmitting station is located several miles from the radio beacon station, but is operated from a microphone located at the airport near the beacon station. Provisions are thus made for control of the whole system of radio aids by a single radio operator at the airport, who is also equipped with receiving apparatus for receiving from such airplanes as have transmitting sets. Wire line connections are also provided at Bellefonte for coördination of these operations with the radio telegraph communications between Bellefonte and other airports

The bureau is carrying on this work with the coöperation of other Government departments, radio manufacturers, and wire line companies, and the air transport companies. One of the results of the work to date is the conclusion that radio aids to air navigation will require the use of specially armored cable on airplanes for the engine ignition systems. With this simple precaution taken in the construction or equipping of airplanes, all three radio aids can be utilized by the use of a very simple receiving set on each airplane. For the experimental work at Bellefonte, one of the post office airplanes used in regular mail flights being provided with shielding.

While it is not expected that two-way telephony between airplanes and ground will be widely used immediately, the importance of this development will eventually make it an every-day service. Recent experiments at College Park have been devoted to this. Using a 100-watt transmitting set on the airplane, conversations were readily held with persons on the ground at distances up to 50 miles. Not only was conversation carried on between the airplane and the operators at the College Park station, but, through the coöperation of the telephone company, connections were made with the regular exchange. Officials of the Bureau of Standards sat at their desks and conversed with the observer in the airplane. This system was personally inspected by Assistant Secretary MacCracken.

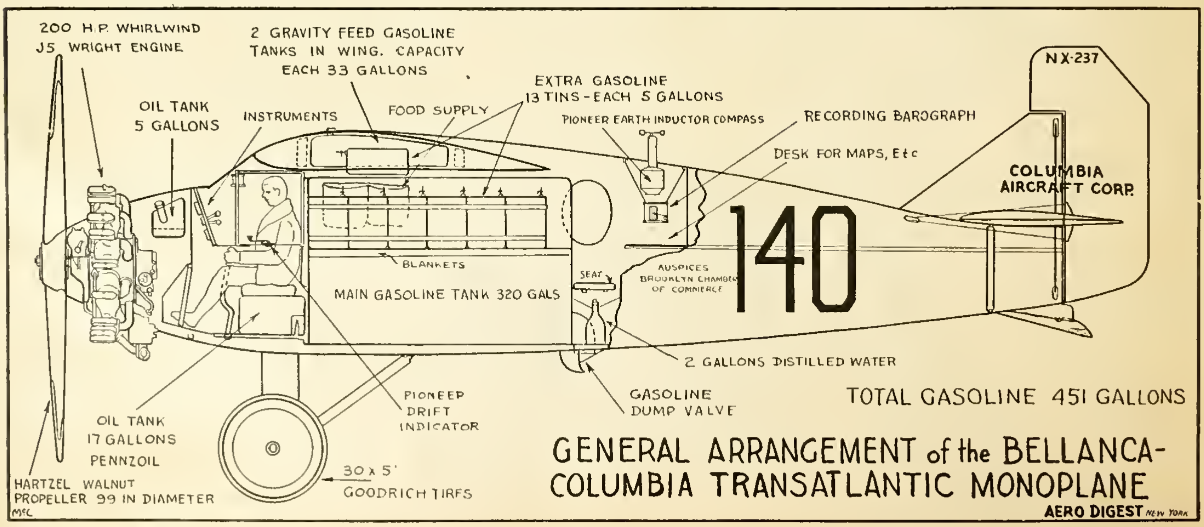
FISCHER-JACOBS ENGINE

THE Fischer & Jacobs engine recently completed at Philadelphia, is a four-cylinder, two-cycle single valve radial motor. It is designated to replace the OX5 motor and is expected to give about the same horespower. It weighs less than 250 pounds and is extremely simple construction. Valves are removable without disturbing the cylinders which are removable without taking the engine from the plane, as are all the accessories.



The two-cycle Fischer-Jacobs engine.

Fischer & Jacobs, Inc., specialize in experimental engineering work and building and rebuilding all kinds of motors.


200 H.P. WHIRLWIND J5 WRIGHT ENGINE
2 GRAVITY FEED GASOLINE TANKS IN WING. CAPACITY EACH 33 GALLONS
EXTRA GASOLINE 13 TINS - EACH 5 GALLONS
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AUSPICES BROOKLYN CHAMBER OF COMMERCE
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GASOLINE DUMP VALVE
TOTAL GASOLINE 451 GALLONS
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GENERAL ARRANGEMENT of the BELLANCA-COLUMBIA TRANSATLANTIC MONOPLANE

LAMATCO

ONE-EIGHTH inch Lamatco panels made from British Columbia cottonwood were used in Captain Lindbergh's monoplane, THE SPIRIT OF ST. LOUIS.

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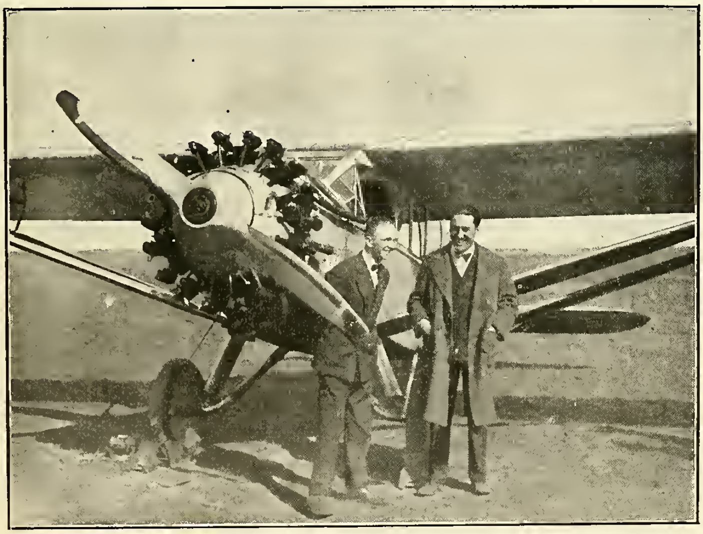

WHEN Bert Acosta and Clarence Chamberlin established a new world's record of 51 hours, 11 minutes and 25 seconds of continuous flying they used Socony Aviation Gasoline in their Bellanca Monoplane.

For experienced aviators and motorists everywhere know that when sustained power, long mileage and dependability are required—Socony is the safest choice. It is Uniform in Quality—Always.

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Uniform Quality - - - Best Results

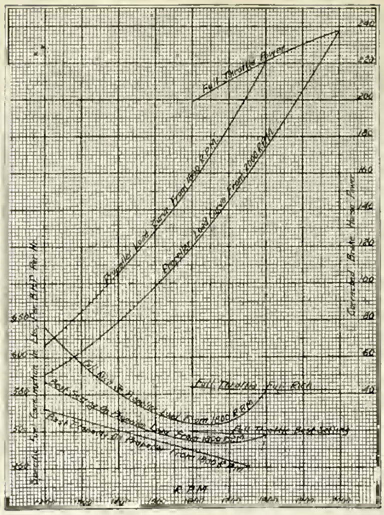
PERFORMANCES OF WHIRLWIND ENGINES

THE power and propeller load curve of the Wright Whirlwind Models J-5C and J-5CA engine will be found useful in determining the power and fuel consumption of the engine under various conditions of operation.

The curve marked "full throttle power" shows the average maximum power at the speeds indicated. An individual engine may vary from 2 to 3 per cent above or below this value.

At the full rich setting of the mixture control, the fuel consumption at full throttle is indicated by the curve marked "full throttle rich." The leanest position of the mixture control at which the engine turns maximum r.p.m. is shown by the curve marked "full throttle best setting." Hence, by the use of the mixture control, at full throttle, with the engine turning 1800 r.p.m., the fuel consumption can be varied between .555 and .495 lbs. per horsepower without losing any revolutions.

An engine fitted with a propeller turning 1800 r.p.m. at full throttle, when throttled to any given speed, will develop the power shown on the propeller load curve. If the full throttle power is not 1800 r.p.m., the propeller load curve will start from the point on the power curve corresponding to the maximum r.p.m. and will be similar in form to the propeller load curve drawn from 1800 r.p.m.



Power and load curves of the J-5 engine.

The fuel consumption on the propeller load curve is given by the three curves marked "propeller load." The upper curve shows the consumption obtained when the mixture control is left in the full rich position. The middle curve indicates the fuel consumption when the mixture control is set to the leanest possible position with the engine still turning maximum r.p.m. and left in this position while running at part throttle. The lowest curve gives the lowest gasoline consumption at which the engine will operate smoothly. To obtain these lowest readings the throttle must be set with the mixture control at full rich to give a speed of 30 r.p.m. above the desired speed. The mixture control should then be pulled back until the engine loses 30 r.p.m. The fuel reading will then correspond to the lowest of the propeller load fuel consumption curves.

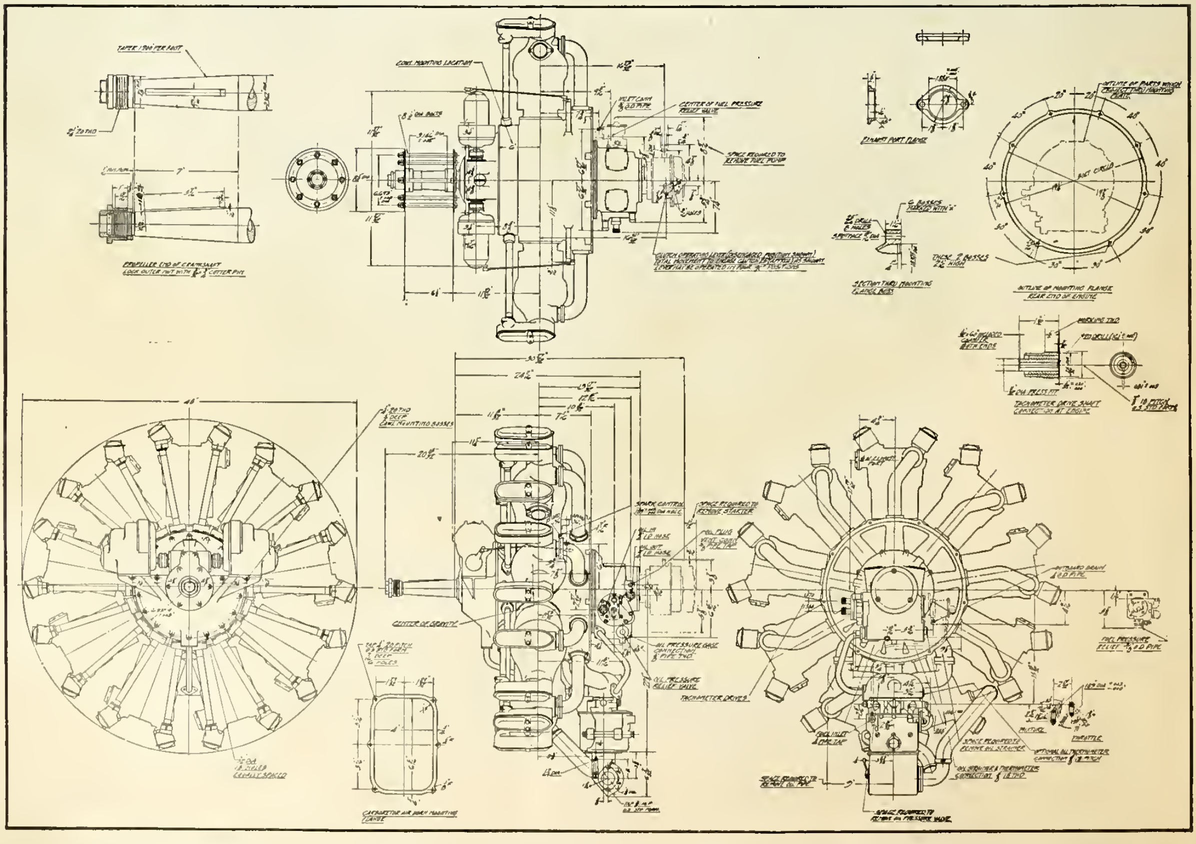
The maximum r.p.m. on the fuel consumption curve must correspond with the full throttle r.p.m. of the propeller load curve. From this point the fuel consumption curves will be similar in form to the curves drawn from 1800 r.p.m.

To convert the specific fuel consumption into gallons per hour, multiply the specific consumption (in pounds per horsepower per hour) by the horsepower which the engine is developing and divide by 6, the weight in pounds of one gallon of gasoline.

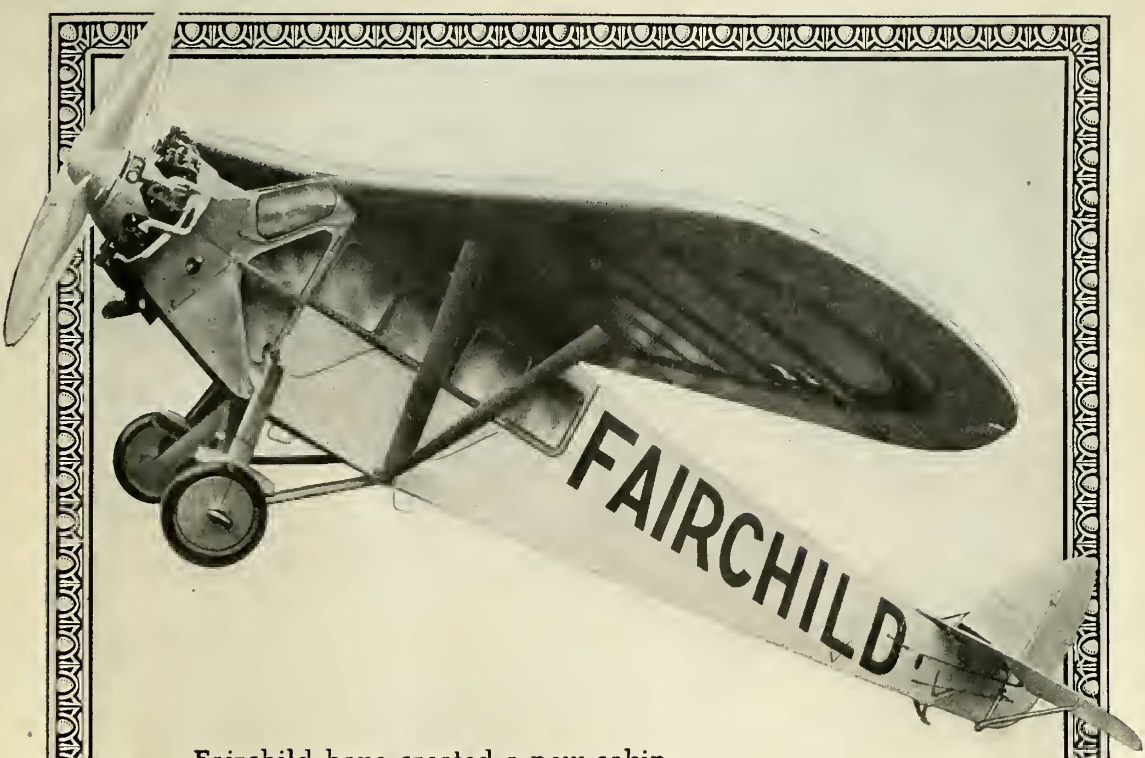
From the information compiled from data supplied by many operators of Whirlwind engines, the following figures should represent the average cost of operation for normal flying at an assumed cruising speed of 100 miles per hour:

Items	*Per Mile*
Fuel 9-12 gal. per hr., @ 25c per gal..	$.0250
Lubricating oil 2 qt. per hr., @ 70c per gal.	.0035
Engine spare parts and overhaul for first 50,000 miles	.0100
Probable direct cost per mile....	$.0385

If it is desired to figure the cost of depreciation, it is generally believed that the Whirlwind may be counted on for 1,500 hours of normal service.



Installation drawings of the latest types of Wright Whirlwind engines, models J-5C, J-5A, J-5C-A and J-5B.



Fairchild have created a new cabin monoplane. Quite the finest machine in its class. The pilot's seat has been placed into the cabin. Powered with the Wright 200 H. P. "Whirlwind", it is the most serviceable plane for the transport of passengers and express goods. Extreme stability and spontaneous response to the controls make the Fairchild Monoplane easy to handle and a pleasure to fly. The cabin provides seating accommodation for four passengers and the pilot. The total laden weight is 3225 lbs., of which 760 lbs. is available for passengers and freight. Maximum speed 124 miles per hour approximately. Wing span 44 ft., or 12 ft. when folded. Write us about your aerial problem, Fairchild facilities are at your disposal.

Fairchild Airplane Mfg. Corporation
Farmingdale, Long Island

DIVISION OF FAIRCHILD AVIATION CORPORATION

THE BOEING MAIL and PASSENGER PLANE

TWENTY-FIVE Boeing Mail Planes have been designed and manufactured by the Boeing Airplane Company to be used on the western division of the transcontinental air mail route which is to be operated by the Boeing Air Transport, Inc. beginning July 1st. The Boeing Mail Plane is designed for operation on an airline where it is desired to carry both mail (express) and passengers in one airplane. It is powered with the Pratt and Whitney "Wasp" radial air-cooled engine.

There are two compartments for mail with a total capacity of 1200 pounds of mail: one just aft of the engine section, and the other just forward of the pilot. The front compartment has a capacity of 25 cubic feet, the rear one of 36 cubic feet. The passenger compartment with the seat removed, has a capacity of 34 cubic feet, in case it is desired to use this for additional cargo space. Both mail compartments are metal lined and are provided with hinged metal covers secured by large straps. The passenger cabin has a fixed metal ceiling.

The enclosed passenger compartment provides for two passengers. There is a door in each side, the doors being provided with sliding safety glass windows. The cabin is furnished with comfortable leather cushions. Provision is made for forced ventilation and heating of the passenger compartment.

The gasoline supply of 100 gallons is carried in two tanks: one of 60 gallons capacity in the body just aft of the front mail compartment, and one of 40 gallons in the upper wing. In the event of the failure of the engine pump, the gasoline feeds by gravity from the wing tank, and the pilot is provided with a hand pump with which he can pump from the main tank to the wing tank.

Side view of the Boeing mail plane powered with the Pratt & Whitney engine.

The engine is equipped with an electric inertia starter. This starter is operated from the pilot's cockpit. An engine driven generator and storage battery (the latter located just behind the firewall in the front mail compartment) provide the electric current for starting and lighting. Complete night flying equipment is provided, including a dome light in the passenger compartment. A pressure fire extinguisher, covering both engine and gas tank compartments, is controled by the pilot. Hand fire extinguishers are provided in the passengers' cabin and pilot's cockpit.

General Characteristics

Weight, with 100 gal. gas and 1600 lbs. payload	5,600 pounds
Wing area	545 square feet
Span	44 feet 2¼ inches
Length (overall)	33 feet 3 3-16 inches
Height	11 feet 7½ inches
Chord of wings	79 inches
Engine, Pratt & Whitney "Wasp"	410 h.p. at 1900 r.p.m.
Propeller—Hamilton forged duralumin blades adjustable on ground.	
Dia.	10 feet
Wing loading	10.3 per square foot
Power loading	13.7 per horsepower
Normal payload per h.p.	3.9 per horsepower

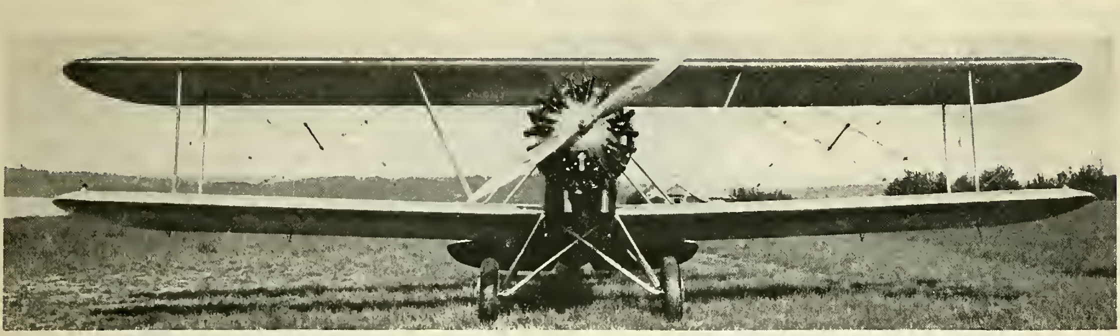
Performance

High speed at ground	135 m.p.h.
Stalling speed at ground with full load	54 m.p.h.
Rate of climb at ground	770 feet per minute
Climb to 10,000 feet	19.5 minutes
Service ceiling	15,000 feet

This airplane is constructed to meet the factors of safety required by the U. S. Department of Commerce.

The wings are of the simplest wood and wire construction, the spars being of solid spruce, routed for lightness wherever possible. The external bracing is streamline duralumin struts and streamline wire.

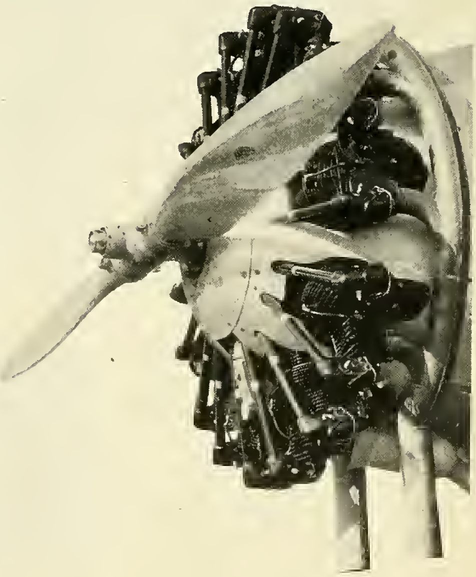
The new Boeing mail plane has an enclosed cabin for passengers.



One of the 25 new Boeing Mail planes, all equipped with Hamilton duralumin blades.

Our sincere wishes for success to the Boeing Air Transport, Inc.

ON July first the newly-formed Boeing Air Transport, Inc., began operation of the Western section of the transcontinental air mail route, between Chicago and San Francisco. Twenty-five of the most modern air mail planes have been constructed by the Boeing Airplane Company for use on this difficult route. These highly efficient airplanes are provided with the best equipment, including the new type Hamilton duralumin propellers with adjustable pitch blades. We are proud of the confidence shown by Boeing in adopting



The business end of the new Boeing Air Mail plane, showing the latest type Hamilton duralumin blades

TRADE **HAMILTON** MARK

PROPELLERS

HAMILTON AERO MANUFACTURING CO.

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FAIRCHILD PLANES FOR CURTISS SERVICE

FLIGHT tests were made last month of the first of two Fairchild cabin monoplanes constructed for the Curtiss Flying Service. These ships are provided with the Curtiss C-6 six-cylinder vertical water cooled engines. For production the Fairchild cabin plane is normally powered with the Wright Whirlwind 200 h.p. engine but it has shown its versatility in the matter of power plants by flying sucessfully with the Curtiss OX5, the C6 and Whirlwind engines.

The present model has many improvements in detail and it is a conspicuously useful addition to the Curtiss Flying Service's fleet of commercial planes. Since all performance tests have not been made, figures on speeds, climb, etc., are not available at this time.

The Fairchild cabin monoplane is an enclosed model designed to accommodate pilot and four passengers, or, pilot and 750 lbs. of pay load. Particular attention has been paid to securing maximum range of vision and comfort for pilot and passengers, exceptional flying qualities, high factors of safety, and standardizing of parts. The machine is also especially suitable for use in aerial photographic work, particularly for the making of aerial maps. The design permits flying the machine from wheels, skis, or pontoons, making it serviceable at all seasons of the year on either land or water.

In addition to the most thorough engineering, supplemented by wind tunnel tests, the many years of practical experience of Fairchild pilots has been incorporated in this machine. Ease of maintenance has received special consideration. The strength factors and material entering into the construction conform to the requirements of the Department of Commerce. Jigs are used throughout, insuring interchangeability of parts and uniform quality.

In cross country flying on photographic work, it has been necessary to operate from small fields which were by no means aerodromes, and this has been kept in mind in the designing of the Fairchild cabin monoplane, as the take-off is very quick, and the landing speed low. The machine has unusual stability and at the same time a high degree of controllability even considerably below the stalling speed, and can be flown "hands off" for long periods at a time. When held in a stall it "squashes" and does not dive nor fall off on a wing. Fairchild cabin monoplanes have been flown many thousands of miles under year 'round weather conditions, and have been thoroughly endorsed by a number of nationally known pilots who have flown the plane. Among the purchasers of the Fairchild cabin monoplane are the U. S. Department of Commerce, and the Curtiss Company, who purchased two machines for use in their flying service.

The fuselage is of welded steel tubing using a rigid Warren truss, making bracing wires unnecessary. This is a most important point in connection with ease of maintenance.

The wings are constructed with very large built up beams of spruce with wood ribs, the whole being fabric covered. An exceptionally efficient wing curve is used. A thoroughly practical and tried-out folding wing arrangement is incorporated, making it possible for two men (without the use of any tools) to fold the wings in about two minutes so that the machine will pass through a 13 foot doorway. This arrangement also permits the machine to be towed behind a motor car along an ordinary highway.

Streamline steel tube Kawneer struts are used to brace the wings at either side of the body. Unusually effective aileron control is provided, which is at the same time very light in operation.

Tail surfaces are of welded steel tube construction, fabric covered. The horizontal stabilizer is adjustable in flight, and the rudder is balanced.

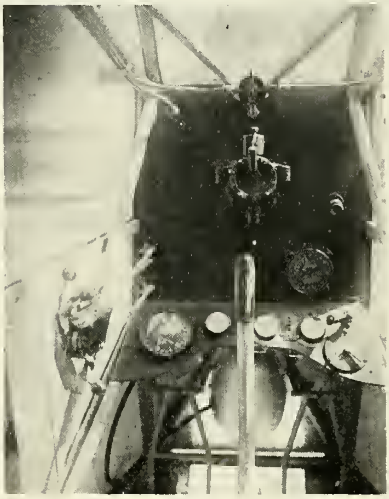
The landing gear is of the divided-axle type with new Fairchild shock absorbing unit. This shock absorber—partly oleo—contains no rubber and is exceptionally easy and free from rebound. The tail skid shock absorber is of the rubber disc type.

Wheel brakes are provided, operated by the pilot's feet in such a manner that both brakes may be operated together or singly. The arrangement is such that in taxying the pilot can use rudder and brakes together to assist in maneuvering on the ground.

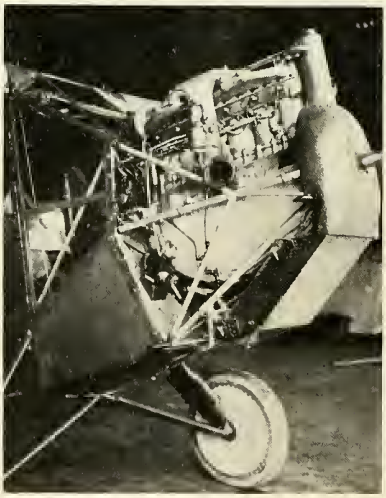
The fuel system comprises three tanks having a capacity of 80 gallons. They are all mounted in the wing, with simple gravity feed insuring minimum of maintenance.

Dimensions and Areas

Length, overall	30 feet, 11¼ inches
Height	9 feet
Span	44 feet
Chord	7 feet
Angle of Incidence	2½ degrees
Dihedral	1½ degrees
Area of wing	290 square feet
Horizontal stabilizer	26.1 square feet
Elevator	18.1 square feet
Rudder	10.2 square feet
Ailerons	21 square feet



View from the pilot's seat showing the instruments, controls and floor windows.



The steel tube mounting of the Curtiss C-6 engine and the underslung radiator.

The Fairchild monoplane is especially suitable for mail or passenger service.

SCHWARZENBACH
Darbrook Silks
LOOMS

"LIFE SAVER"
Darbrook Parachute Silk

The U. S. Navy Department has awarded contract for the manufacture of 326 parachutes to Follmer Clogg & Co., Lancaster, Pa., these to be made entirely of "*Life-Saver*" *Silk.*

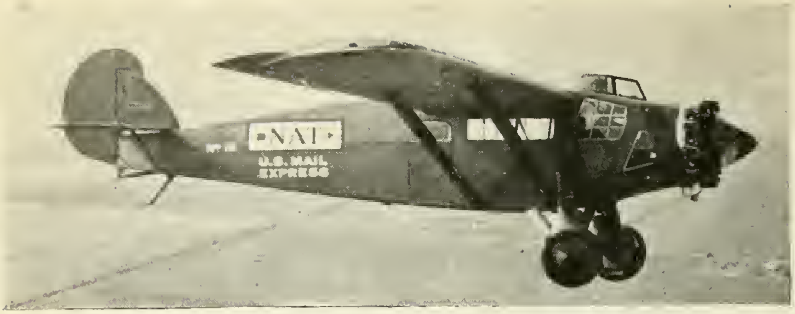
Parachutes made of "*Life-Saver*" *Silk*—a product of American invention and manufacture—assure the aviator a greater margin of safety than may be obtained in any other material. Oscillation is reduced to a minimum and "jerk" in opening, particularly in delayed opening, is eliminated.

"*Life-Saver*" *Silk* is woven and supplied exclusively by

SCHWARZENBACH, HUBER & CO.

462-478 Fourth Avenue New York

Chicago San Francisco Philadelphia Dallas
Los Angeles Minneapolis



THE TRAVEL AIR CABIN MONOPLANE

THE Travel Air monoplane designed for passengers, mail and express is equipped with the Wright Whirlwind motor. It has an excellent streamline from nose to tail. The glass-enclosed forward cockpit with visibility in many directions, the large cabin door for entry and exit or loading and unloading mail and express, and the all-over trimness of the ship make the design outstanding.

In the 3-view outline drawing below, the good streamlines and proportions of the ship are clearly shown. The wide-tread landing gear and sturdy chassis design make for easy and safe landings.

Three of these monoplanes are in the service of N.A.T. A brief general description of the ship was given in the February issue of AERO DIGEST.

Additional general specifications and performances of the Travel Air monoplane are:

Wing span	51 feet 7 inches
Length overall	30 feet 2 inches
Height overall	8 feet 9 inches
Wing chord	6 feet 9 inches
Angle of incidence	4 degrees
Dihedral angle	1 degree
Wing area	312 square feet
Aileron area	27.5 square feet
Horizontal tail surface area	42 square feet
Vertical tail surface area	17 square feet
Weight empty	2,200 pounds
Pay load	750 pounds
Weight loaded	3,600 pounds
Fuel capacity	75 gallons
Oil capacity	6 gallons
Engine	Wright Whirlwind model J5-C
Horse power	220 at 1,800 r.p.m.
Weight per square foot	11.5 pounds
Weight per horsepower	16.4 pounds
High speed at 1,900 r.p.m.	123 miles per hr.
Landing speed	55 miles per hour
Rate of climb (sea level)	710 ft. per min.
Climb to 10,000 feet	23 minutes
High speed at 1,950 r.p.m.	125 miles per hr.

SAFETY OF WRIGHT WHIRLWIND ENGINES

A GREAT many pilots know a great deal about Wright Whirlwind engines but Clarence Chamberlin is now in a position as holder of the world's record for both duration in time of flight and long distance flight to speak with authority on their safety. He sent the following cablegram from Berlin: "WRIGHT J-5 WHIRLWIND PERFORMANCE WONDERFUL MOTOR NEVER MISSED A BEAT."

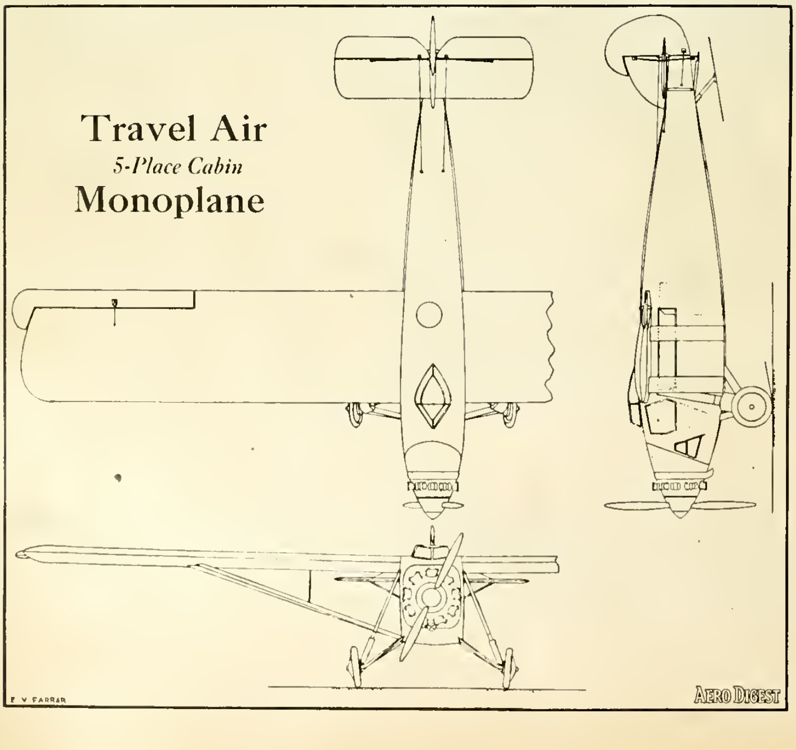
It is hard to conceive greater proof of the safety of Wright Whirlwind engines than the three record beating flights recently made—first Chamberlin and Acosta on duration, then Colonel Lindbergh blazing the way to France, then Clarence Chamberlin and Charles Levine making Germany in one hop.

Few of us stop to realize the tremendous load that these engines started off with on these flights. Both Lindbergh and Chamberlin carried over 450 gallons of fuel at the take-off, that is over 2700 pounds of gasoline alone together with the weight of the tankage which contained this fuel. To get a conception of the strain that was put on the engine and plane with such a load of gasoline imagine loading nine 50-gallon drums of gasoline in the tonneau of your automobile and then racing across a rough landing field (not a concrete road) at a speed of 60 miles an hour. It can be left to your imagination whether your automobile engine would stand it and what would happen to the car itself.

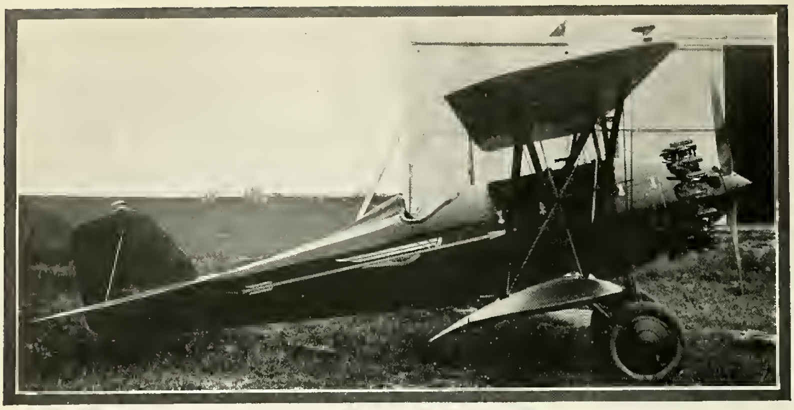
Another thing that Chamberlin's two record-breaking flights and Lindbergh's initial flight have brought home to the general public is the mileage per gallon of fuel which these Whirlwind engines are able to obtain in modern, efficient American airplanes. Colonel Lindbergh flew 3647 miles with a total fuel consumption of 366 gallons which is an average of 10 miles to the gallon of fuel. It is probable that the fuel consumption per mile was probably lower at the end of the trip than during the first 2,000 miles when he had his heavy fuel load. As his average speed was about 108 m.p.h. it is probable that the last 1,000 miles were made with fuel economy of better than 12 miles to the gallon. The oil consumption was about 9 gallons or approximately 1 quart per 100 miles.

Chamberlin's fuel consumption in miles per gallon cannot be estimated as closely as Lindbergh's because while the mileage credited to Chamberlin is only 3905 miles, it is estimated that he actually flew 4400 miles before making his landing at Eisleben. However, these figures would also give an average of approximately 10 miles per gallon of fuel. It will be recalled that on Chamberlin's duration flight the average fuel consumption for the 51 hours was 7½ gallons per hour and the oil consumption less than 1 pint per hour.

Then again all three of the Whirlwinds used on these record flights were in A-1 condition when they landed. On Chamberlin's duration flight at Roosevelt Field the gasoline tanks were filled up and the plane flew over to another field before the engine had even cooled off. Colonel Lindbergh flew his Whirlwind job from Paris to Brussels and then to London without any overhaul. Chamberlin, after two landings from lack of fuel and damaging his propeller, put on a new propeller, filled up the tanks and flew to Berlin.



NOTICE the pleased smile of H. G. Lockwood, Chief Inspector of Pilots and Planes, Aeronautical Division, Dept. of Commerce. He had just completed his first test flight of his new Travel Air plane, and expressed his gratification to Walter Beech, President of Travel Air, as shown above. The picture speaks for itself. For more particulars about these remarkable airplanes address Travel Air Mfg. Co., Wichita, Kansas.



The Pitcairn "Mailwing" powered with the Wright "Whirlwind" engine.

PITCAIRN AIRCRAFT

PITCAIRN Aviation and Pitcairn Aircraft,—respectively the operating and manufacturing departments of the company —have experienced this spring an increased activity and extension of interests that parallels the tremendous increase in public interest in aviation. The first half of 1927 has seen two new types of Pitcairn planes developed and put into service, two new Pitcairn fields opened, and a tremendous increase in passenger service. In addition there has been the award of the New York to Atlanta Air Mail Contract to the company by the Post Office Department, and a consequent multiplication of activities and responsibilities.

The first new type developed this year, the Pitcairn Fleetwing DeLuxe, is a successor to Pitcairn Orowing, and embodies its most desirable characteristics with an increase in speed and maneuverability. Powered with an OX-5 motor it shows a top speed of about 102 m.p.h., and the plane is very light on the controls. Its construction follows Pitcairn practice in a high standard of materials and workmanship, and special attention has been given to an attractive, durable, and distinguished finish. A new feature of construction is the use of round-cornered square tubing in the longerons of the fuselage, which permits a more satisfactory and at the same time economical welding of the cross members. This development is the result of an extended period of research and test, and will be standard practice in the present manufacturing program. A distinctive feature is the radiator, cowling, and nose design, which follow the lines of high-class automobiles in appearance and finish. Ailerons are on the lower wing only, the top wing being a single member. The performance has proved highly satisfactory, and the ship passes with equal merit the critical test of pilot and passenger.

On June 20th the new Pitcairn Mailwing came from the factory for its test flights, taking off a few days later to join the Reliability Tour. This plane was designed and built for use on the New York to Atlanta mail route, and there are numerous details of interest that are the consequence of this design for specific service. The Wright Whirlwind is used, and test flights showed a top speed of 135 m.p.h. with no appreciable decrease when the ship carried a 600 pound load. The fuselage design is developed from that of the Fleetwing. There are no passenger seats, the space being given over to the mail compartment. The cockpit houses a complete set of controls and instruments, including controls for flying and landing lights, a complete set of navigating instruments, brakes, landing-flare releases, adjustable stabilizer control, and fire-protection equipment. Indirect illumination is provided on the dashboard. Landing lights are inserted in the lower wing, one pointed downward and one throwing a straight beam ahead of the ship.

In addition to its speed the plane shows remarkable climbing ability and a low landing speed, while brakes reduce the landing roll at full load. The cruising range is about 450 miles, and cruising speed is estimated to be about 110 m.p.h.

Eight Pitcairn Mailwings are being built for use on the new line, and it is intended that each shall be named for one of the cities on the route.

The first of the new airports on the north and south route was opened with appropriate ceremonies on May 28th, when the Tri-City Airport was dedicated. This is the municipal field, located at Friendship, N. C., midway between the three cities of Greensboro, Winston-Salem, and High Point, N. C. Three Orowing planes are now engaged in passenger service and instruction. A branch of the Pitcairn Flying School has been opened here, and Roy Rafus has been transferred from the main field as manager in charge.

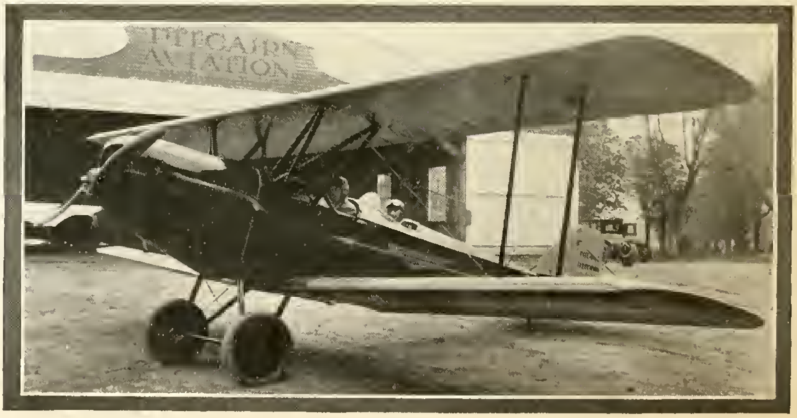
A third in the series of Pitcairn fields and school is now in operation at New Brunswick, N. J., adjoining Hadley Field. The near future will see the opening of similar operations at Atlanta, Ga., the terminus of the line.

"LIFE-SAVER" PARACHUTE SILK

KEEPING pace with the remarkable advance which has taken place in aircraft, there has been developed in the laboratories of an American silk manufacturer, a new material for parachute use. It combines the maximum of strength obtainable in fabric at minimum weight.

This material, woven by Schwarzenbach, Huber & Co., one of the world's largest producers of silks, has been constructed as a result of experiments carried on in association with the Department of Commerce. The new fabric has been given the tradename of "Life-Saver" parachute silk. In Bureau of Standard tests it has developed greater efficiency than the Japanese Habutai heretofore used. Its outstanding advantages are absolute uniformity throughout—insuring maximum of strength in warp and filling—and greater resistance to break or tear. A distinct advantage is the basket-weave, or porous construction of the material. This, at point of impact, prevents the "jerk" upon opening of the parachute, taking up the strain at a uniform rate as the 'chute descends. As resistance develops the material becomes air-tight and as a consequence there is, by reason of greater porosity at impact, freedom from oscillation. In this important improvement there is greater assurance to life and safety.

A series of successful tests conducted by the Navy Department at the Naval Air Station, Anacostia, D. C., have resulted in the award of contract for 326 parachutes to Messrs. Follmer, Clogg & Co., Lancaster, Pa. This endorsement of the material confirms the estimate arrived at by comparison of Bureau of Standard tests and experiments made by individual parachute manufacturers.



The new Pitcairn OX-5 "Fleetwing DeLuxe," successor to the "Orowing."

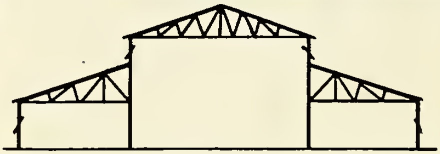
"LINDBERGH PLEADS FOR MORE AIRPORTS"

PROGRESSIVE American cities planning Airports, airplane manufacturers and owners, and air transport organizations should investigate immediately

PARKER BUILDINGS

They Meet Airport Requirements

Designed to meet the owners' ideas and needs, built speedily at a great saving by applying Parker Standardized Framing Units. Parker Service assumes full responsibility for all details. You furnish the site, we deliver your building ready to occupy or use.



Type 3-M. Three-bay monitor building. Monitors contain continuous runs of steel sash, mechanically operated.

SIZE—Ample clear hangar space without columns.

ARRANGEMENT—Series A Buildings provide working space in addition to plane storage space.

FIREPROOF—Series A Buildings are absolutely fireproof. The trusses, framing units, sash and doors are of steel. The sidewalls and roof are asbestos-cement consolidated under tremendous pressure to produce virtually a fabricated stone. Fire cannot crack, blister or warp them.

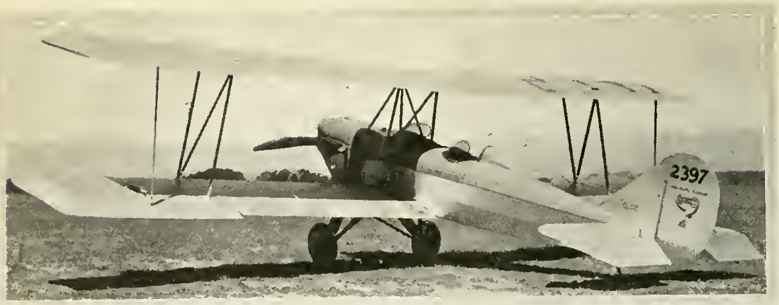
Low Insurance Rates—Series B Buildings also have the advantages of low insurance rates. The trusses, framing units and sash are of steel. The sidewalls are of brick and the roofs are of heavy timber covered with felt and asphalt waterproofing guaranteed for ten, fifteen or twenty years.

1956

Standard Erecting Corp.

551 FIFTH AVENUE NEW YORK

STANDARD ERECTING CORPORATION
551 Fifth Avenue, New York, N. Y.
Gentlemen:—
Please send me details of Parker Buildings. Approximate
size .... ft. by .... ft.
Name ....
Address ....
City ....
State ....



The new improved OX5 engined Alexander Eaglerock commercial three-seater.

IMPROVED EAGLEROCK

AIRMINDED enthusiasts have been watching with keen interest the gradual improvement in appearance and details of the Alexander Eaglerock. From the first hand made job, a little over two years ago, to the present production job, the ship has been developed until to-day it is recognized as one of the leaders in the field of American commercial aeronautics.

Recent added improvements are—split-type landing gear, Hamilton propeller as standard equipment, unit type cowling, all metal tail surfaces, improved design in windshields and improved lacquer finish.

The split-type landing gear is wider than the old, gives the ship a more beautiful line and making it easier to taxi and land.

The Hamilton propellers are made to Eaglerock specifications and give the maximum efficiency. Making them standard equipment adds almost $100 to the value of the ship at no increase in price.

The unit type cowling is truly a production cowling, interchangeable and much neater in appearance. It adds to the stream-lining, increases strength and affords better protection to both cockpits.

All metal frames in tail surfaces give greater permanent strength and do away with warping in damp weather.

The newly designed wind shields give real protection and are bound with metal strips to add to their life.

These improvements together with the best lacquer finish obtainable, places the Eaglerock on a par with custom built ships. The low purchase price is made possible by large production and an ever increasing demand for Eaglerocks.

FRY SUPER TWIN PUMP

THE Fry Super Twin pump has many new features, the most interesting of which is the one having to do with the continuous discharge by pressure, instead of by gravity. When one cylinder is filling, the air contained in that cylinder is forced through a by-pass into the top of the cylinder that is discharging, thus forcing the gasoline out through the hose. This passing of air from one cylinder to another during the process of operation, provides a continuous stream from the nozzle and makes it possible to fill any tank without diminishing the speed of operation.

Other features of special interest in the Fry Super-Twin are: The indicator is so interlocked with the pump mechanism that after delivery has been completed to a customer, the pump is automatically locked and cannot be operated until the indicator has been returned to zero. The indicator records the gallons delivered and it records them only after delivery has been made. Only that portion of the liquid which passes through the hose is recorded. Gasoline returning to the under ground storage tank is not recorded.

Continuous flow—the ability to deliver continuously until a container has been filled—is another good feature. The pump must deliver an accurate gallon or else it will not operate. For if the cylinder is not filled completely, the valve will not reverse to start delivery from that cylinder.

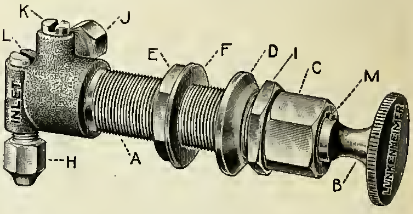
All in all the Fry Super-Twin is a pump that the entire industry can be proud of—a pump representing and embodying the farthest attainments in pump engineering and design up to this time. It is especially convenient for use at the most modern airports.

GASOLINE PRIMER

NOTHING is more effective as an aid to the quick starting of a cold gasoline engine than an extra charge of fuel properly fed to the various cylinders. The use of individual priming cups, one on each cylinder, is often resorted to, but to prime an engine by means of these individual cups requires considerable time and trouble.

The Lunkenheimer gasoline primer is a single device, attached to the dash within easy reach of the driver. It effectively and simultaneously primes all cylinders of the engine and combines efficiency with simplicity. It occupies but little space, the cylinder measuring only ⅝-inch in diameter by 2⅜ inches in length.

The operation of this primer is so simple and convenient that the driver will not hesitate to use it before every start of the motor, thereby conserving the energy of the battery, and consequently reducing wear on the starting mechanism. It may also be justly considered a safety device, because when priming the engine, gasoline is not exposed to the atmosphere, and therefore danger from fire is greatly lessened.



The Lunkenheimer primer is widely used by manufacturers of airplane engines, and together with the pipe and tubing fittings, was part of the equipment of Captain Lindbergh's "Spirit of St. Louis."

BUTLER CO. CATALOG

USEFUL information to oil men, as well as a complete listing of oil equipment is given in Catalog No. 104, just issued by the Butler Manufacturing Company, Kansas City, Missouri, and Minneapolis, Minnesota.

A good size picture showing how to erect horizontal storage tanks is in this catalog. Capacity of cylindrical tanks, explanation and description of the U. S. Standard Gages and other information are given.

A copy of the book will be sent free by the company upon request.

The newest production Eaglerock with split type landing gear, Hamilton propeller and other improvements.

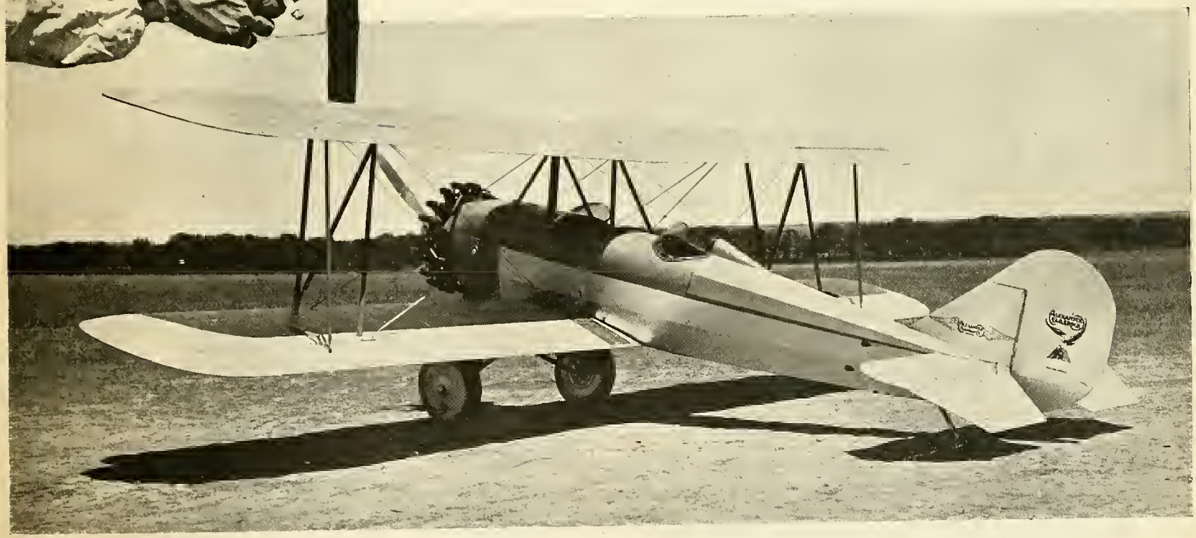
Watch—
EAGLEROCK!
in the National Air Tour

The Whirlwind Eaglerock is not an OX5 model equipped with a Whirlwind motor, but is a special job throughout. Price is $10,000 on field—Denver.

The price of improved OX5 model Eaglerock remains the same—$2,475 on field—Denver. Either Whirlwind or OX5 job may be purchased on time payments.

NOW 27 DEALERS

W. Mo. and E. Kan.—Bennett Eaglerock Sales Co., 223 W. 12tb St., Kansas City, Mo.
So. Cal. and Ariz.—Aero Corporation of California, Western Ave. at 99th St., Los Angeles
N. M. and Cen. Texas—Browning Airplane Sales, Wichita Falls, Tex.
Wisconsin—Hall Aircraft Co., 101 Scott St., Wausau, Wisconsin
E. Mo., Ark., and S. Ill.—Bridgeton Aircraft Corp., 223 Pierce Bldg., St. Louis
W. Washington and W. Oregon—Story Eaglerock Sales, Mueller-Harkins Airport, Tacoma, Wash.
N. C. and Va.—Charles Flying Service, 3100 Garland, Richmond, Va.
N. Y. and Conn.—Atlantic Airways Inc., New Rochelle, N. Y.
La.—Louisiana Airways, 1712 Pere Marquette Bldg., New Orleans
Okla. and Tex. Pan.—Southwest Airplane Sales Corp., Britton, Okla.
Ill. and S. Wisc.—Seivert Aircraft Corp., 5934 So. Cicero, Chicago, Ill.
Utah, Nevada, S. Idaho—Rocky Mountain Airways, Salt Lake City
Minn. and Iowa—Miller Eaglerock Airways, 1225 W. 12th St., Des Moines, Iowa
S. Dak. and N. Dak.—Rapid City Air Lines, Inc., Rapid City, S. D.
Ky. and Tenn.—Datin Eaglerock Sales Co., 2031 Central, Memphis
W. Va. and E. Ohio—Lyle H. Scott, 328 2nd St., Marietta, Ohio
Florida—Wesley N. Raymond, Puntagorda, Fla.
Southern Tex.—Marion P. Hair, P. O. Box 420, San Antonio, Texas
Georgia—Georgia Airways Inc., Candler Field, Atlanta, Ga.
Indiana—Captain J. A. Yonge P. O. Box 1185, Indianapolis, Ind.
Wyo., Mont. and W. Neb.—Wyoming Airways, Casper, Wyoming
Mississippi—Tri-State Airways, Bry Block, Memphis, Tenn.
Northern California—Jas. L. Mayberry, Fresno, Calif.
W. Kans. and E. Nebraska—C. E. Steele, Dodge City, Kansas
Michigan—Niles Airways, Niles. Michigan
E. Penn. and Maryland—Hybla Valley Aviation Co., Alexandria, Va.
So. Carolina—Erritt Williams, Greenwood, S. C.



DENVER ALEXANDER AIRCRAFT Co. COLORADO

PERFORMANCE WITH ECONOMY

FOR SALES INFORMATION SEE J. A. McINANEY AT ANY ONE OF THE STOPS

WESTERN NEWS

BOEING AIR TRANSPORT

The Boeing Air Transport, Inc., is incorporated under the laws of the State of Washington, with a capitalization of $750,000. The officers are: W. E. Boeing, president; P. G. Johnson, executive vice-president; Edward Hubbard, vice-president in charge of operations; O. W. Tupper, secretary; and C. L. Egtvedt, treasurer.

The corporation was awarded the contract on the San Francisco to Chicago division of the transcontinental service, starting July 1st, 1927, and continuing for a period of four years. The operating schedule will be the same as now maintained by the Post Office Department, leaving San Francisco at 7 a.m. with stops at Sacramento, Reno, Elko, Salt Lake City, Rock Springs, Cheyenne, North Platte, Omaha, Des Moines, Iowa City, arriving Chicago 5:45 the following morning. Westbound leaving Chicago 7:50 p.m. arrive at San Francisco 4:30 p.m. the next day, making a total of approximately twenty hours elapsed time.

25 airplanes to be used have been designed and manufactured by the Boeing Airplane Company particularly for this route. They will have a capacity of 1,200 pounds of mail, in addition to two passengers. The passengers will ride in an enclosed cabin. The planes are powered with the Pratt & Whitney "Wasp" radial air-cooled engine.

The personnel, under the management of Mr. Hubbard, who will be assisted by D. B. Colyer, former general superintendent of the air mail service, will consist of pilots and mechanics who are now in the employ of the Post Office Department on this particular route.

Nothing is being overlooked by the company to insure a consistent operation on this important route. The airplanes themselves will represent an investment of over half a million dollars. Every effort has been made to procure the best obtainable in ground equipment and flying equipment.

INTERNAT'L AVIATION PEACE JUBILEE

THE arrival at Santa Ana Airport of the "On to Santa Ana" entrants on July 2nd opens the International Aviation Peace Jubilee to be held July 2nd-9th under the auspices of the Hollywood Aero Club and the Santa Ana Air Club. Aerial events and contests will complete the day's program.

A water carnival at Newport Beach is scheduled for Sunday, July 3rd. On July 4th there will be an air carnival, races, and other air events at Santa Ana Airport. July 5th will be Hollywood Day; and from July 6th-9th aerial visits will be made to California cities.

Captain Charles H. Babb represents the N. A. A. Contest Committee, Burr McIntosh is chairman of publicity, and George A. Raymer, chairman of arrangements.

NEW SALES EXECUTIVE FOR STEARMAN CO.

STEARMAN AIRCRAFT recently acquired a valuable addition to its personnel in James E. Granger, the former secretary and manager of both the Los Angeles Automotive Trade and the Southern California Automotive Dealers Associations.

Previous to his connection with Stearman Aircraft, Inc., Granger had never engaged in any phase of commercial aviation despite the fact that his flying experience antedates the "Jenny Era." In conjunction with Lloyd Stearman, who as the builder of the Swallow and later the Travel Air has twice proved his ability as a designer, Granger, with his wide experience in sales promotion and distributive organizations, affords the Stearman company a capable and well balanced executive force.

Mr. Granger celebrated his affiliation with the Stearman organization by securing an order for two Whirlwind equipped Stearman biplanes to be used on Varney's mail run.

VENTURA AIR MEET

THE air meet to be held on July 3rd at Ventura, California, starting at 1:00 p.m., is the main feature of a huge Fourth of July celebration to be held in Ventura on the 2nd, 3rd and 4th of July under the auspices of the American Legion. The sponsors for this meet are: Ventura County Post No. 48, American Legion; Frank Meline Co.; A. L. Hobson; Calif. Eastern Oil Co.; Peoples Lumber Co. and Campbell Paint Co.

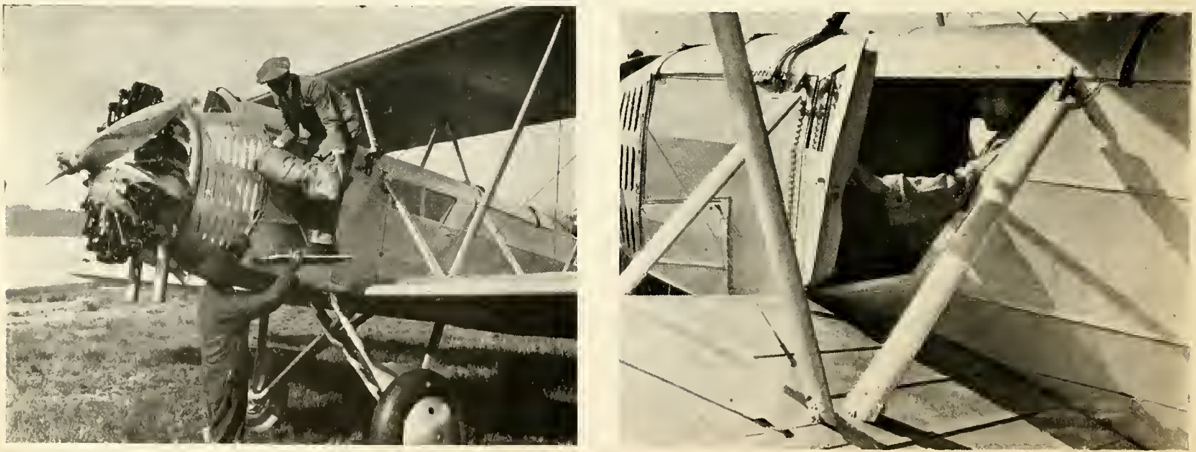
Earle Ovington of Santa Barbara will be the official referee.

The program consists of: Jennie scramble; exhibition flying by naval aviators; OX-5 commercial race; stunt contest; dead stick landing; parachute landing; and an exhibition plane change and wing walking. The Frank Moline trophy will be presented to the winner of the Santa Ana-Ventura handicap race. Prizes totalling $1000 are offered. In addition to the contests adequate space will be provided for manufacturers and distributors for showing their planes. The object is to stimulate public interest in commercial aviation, and arouse interest in the acquisition of airport in Ventura County.

Every person arriving by air is invited to a Spanish Barbecue for which Ventura County is famous. Arrangements have been made for free gasoline for entrants in the events.

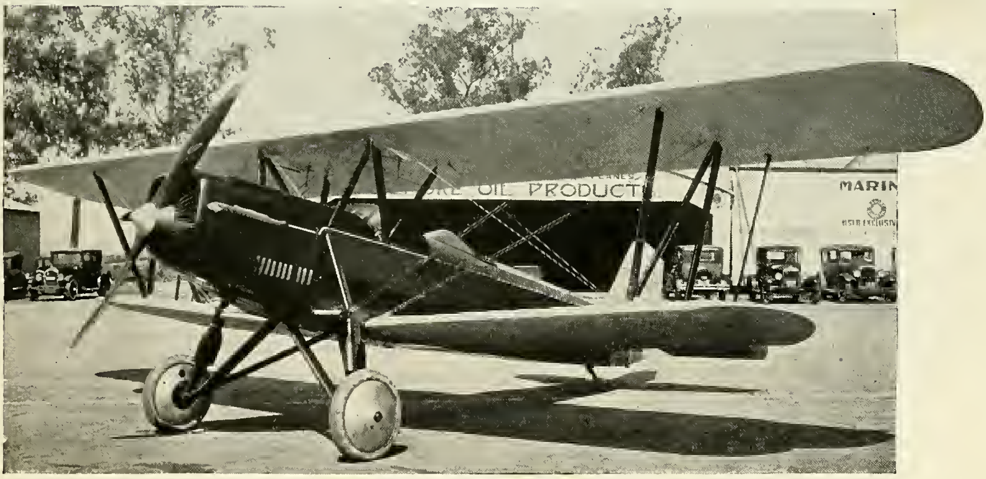
The field to be used for the meet is located between Pierpont Bay and bluffs rising behind the coast, not the old Ventura City field. It is over 5000 feet long, no obstructions at the landing end; low power line at the take off end; prevailing wind from West all summer. No charge will be made for admission, the entire meet being free to spectators and fliers.

F. M. Coray and Jay M. Fetters are chairmen of meet. The official referee is Earle Ovington, Santa Barbara, veteran conductor of many successful meets.



Views of the Boeing mail plane with Pratt & Whitney "Wasp" engine, showing how mail and passengers are carried.

Dedicated to the Discriminating Buyer



Designed by Lloyd Stearman

STEARMAN AIRCRAFT Inc., was not organized with the intent of competing in that already large field of Airplane Manufacturers wherein success is dependent on the low selling price of a product.

Stearman-built airplanes are indicative of an unwavering purpose on the part of their builders to produce a line of aircraft of obvious superiority.

STEARMAN AIRCRAFT INC.
353 Third Avenue Venice, California

Write for particulars

Hall Bruce, chief mechanic, W. B. Kinner, engineer and Walter Hengst, test pilot of K-E-8 Special, built by the Kinner Airplane and Motor Corp. for Dr. T. C. Young.

INTERNAT'L PLANES FOR PACIFIC HOP

AT least two, and perhaps a greater number, of the flyers who will hop off from the mainland for Honolulu in August in an attempt to pull down the James Dole $25,000 prize for the first successful America to Hawaii flight, will fly Fisk-built planes made by the International Aircraft Corporation of Long Beach, California.

Several ships are now under construction at the International plant, according to H. A. Speer, sales manager of the firm, that will be flown in the Honolulu race by pilots whose names are being kept secret at this time. Both of these ships are standard models.

The latest report from this rising young firm states that after only four months in their first plant they have had to seek larger quarters with a 66 2/3 per cent increase in floor space.

The progress of International Aircraft has been rapid. They organized on the ninth day of last February with only three mechanics and no orders on hand, but with a million dollars worth of enthusiasm and confidence in the rapid growth of aviation in the West. To-day, just a little over four months later, their working force has increased to about 70 men and they are dozens of orders behind in production. They are now on a production basis of two ships per week and expect in a short length of time to be turning out six ships per week. During the first eight days in their new plant they turned out three ships complete which is somewhat of a record for rapid aircraft production.

Their new quarters are conveniently situated near the ocean, providing them with nearby water for the testing of hydroplanes.

The two most popular models being manufactured by the firm at this time are the International F-17 and the International F-18. The F-17 is a trim sport plane, three-place, highly perfected in detail. It is described on page 76 of this issue.

The International F-18 is a 5-place commercial job that may be used for passengers or freight. The seats are collapsible and may be folded up and stored under the pilot's seat, leaving a metal-lined compartment that will carry 1000 pounds in addition to the pilot.

All International planes are designed by Edwin M. Fisk who has a nation-wide reputation as an aeronautical engineer. Fisk-built planes are known for their delicacy of balance and the skillful enginering embodied in them. These planes are said to right themselves without the aid of the control stick under practically all conditions. Some of the features embodied in Fisk-built planes are: Oleo landing gear, double ailerons of the set in type; removable motor mount; enclosed empennage controls; radiator streamlined into leading edge of upper wing; 40-inch passenger cockpit, upholstered; oversized windshields; N struts throughout; octagon-shaped fuselage of Haskelite plywood; box beams and steel and duralumin fittings. International allows a choice of color schemes in their planes both as to the paint job and the color of the upholstering.

OREGON AIRPORTS

ESTABLISHMENT of aviation landing fields in each of the 119 cities in Oregon having American Legion posts, will be their contribution to aeronautics in Oregon, according to George E. Love, vice commander of the Legion.

Post aeronautic officers are coöperating and preparations are being made to get the various fields in shape as quickly as possible. The work is to be completed within 90 days, at the end of which time maps will be issued showing the exact location of every airport in Oregon and classifying the fields.

There are only four landing fields in Oregon at present. The Eugene field was established by the community for the use of forest service patrol and commercial aviators; that at Medford provides for commercial flyers, forest patrol and aerial mail service; one was recently completed at Grants Pass by the American Legion and another field has been established between Scappoose and St. Helens by the Columbia County Aero Club.

Eugene Post No. 3 of the American Legion has assumed responsibility for marking the local field and work has already started on the project in an effort to be an example of efficiency for other parts of Oregon.

THE K-E-8 SPECIAL

THE K-E-8 Special was designed and built by the Kinner Airplane and Motor Corp. of Glendale, Calif., for Dr. T. C. Young, who is president of the Western Aero League, president of the Glendale Kiwanis Club, chairman of the Aeronautical Committee of the California Development Association and one of the co-owners of Glendale airport.

The K-E-8 is the eighth experimental plane the Kinner organization has constructed since they started in 1919. It is a single bay biplane, having an area of 450 sq. ft., chord of 6 ft., span 39 ft., is 26 ft. long and stands 9 ft. 6 in. high. It carries 4 passengers, 80 gallons of gas and 10 gallons of oil. A 300 h.p. Hisso motor is used at present but Dr. Young plans to install three Kinner 5-cylinder radial motors, which would give the same power with considerably less weight. The ceiling is 18,000 ft., speed 120 m.p.h., landing at 35 m.p.h.

Dr. Young also owns a Kinner Airster and has his order in for one of the new models which are equipped with the new Kinner 5-cylinder radial air-cooled 100 h.p. motor, developed last year by the Kinner Airplane and Motor Corporation.

AERO CORP. NOTES

TWO planes from the Aero Corporation of California, joined in the observance of Memorial Day by Southern California patriotic organizations. Lieut. Paul Richter and Pilot Lee Willey, both flying Eaglerocks, joined in a formation flight dropping flowers over the Roosevelt Memorial Park, which was led by the commander of the Black Falcon Pursuit Squadron of Clover Field. Lieut. Richter later flew, with a passenger, to scatter flowers over the cemeteries of Southern California.

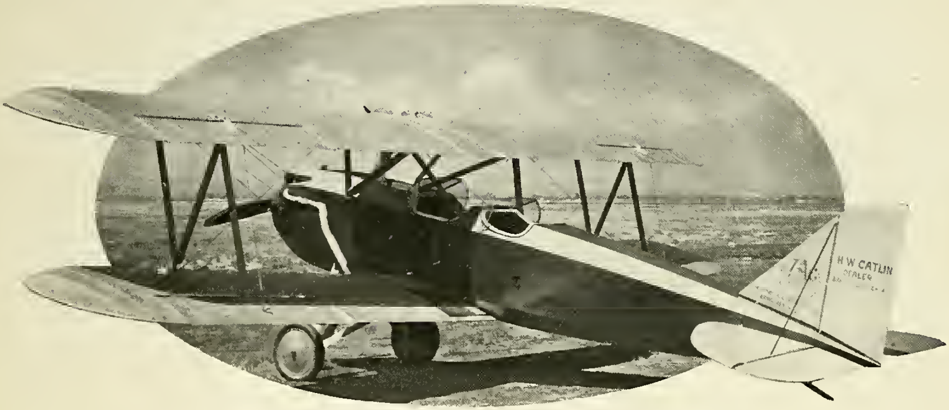
Officials of the Aero Corporation are proud of the fact that Col. Charles A. Lindbergh visited their field while his NY-P plane was under construction in San Diego, and spent an entire afternoon in flying high school boys over Los Angeles in an Alexander Eaglerock plane and in talking to the boys concerning the future of aviation.

The result of Col. Lindbergh's interest in the boys was the immediate formation of the Jefferson High School Aero Club, and in the past six weeks several Los Angeles High Schools have formed Aero Clubs and several hundred boys have visited the field to fly or study aviation.

Major R. A. Gibbs, headmaster of the Page Military Academy of Los Angeles, brought his graduating class and faculty to the field on June 9th, for a flight over the school as part of their commencement week program. Thirty boys and ten instructors were flown over the school, three at a time, in two Eaglerock planes piloted by Lieuts. Jack Frye and Paul Richter.

Lieut. Frye, accompanied by his wife, recently flew in from Denver with a new Eaglerock for Mr. Schott of Los Angeles, who is now flying it for sport and pleasure. The flight was made in fifteen hours flying time, with two stops.

"The INTERNATIONAL"



International F-17 four place, 150 h. p. Hisso

Beauty plus Engineering

Points of Superiority in International Aircraft

- Oleo Landing Gear
- Double Ailerons, set in type
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- All Empennage Controls Enclosed
- Radiator Streamlined in Leading Edge of Upper Wing
- 40 Inch Passenger Cockpit, Upholstered
- Oversized Windshields affording perfect protection
- N Struts thruout
- Octagon Shaped Haskelite Plywood Fuselage
- Box Beams
- Steel and Duralumin Fittings

THE day is gone when the best airplane construction is a matter of good engineering alone. The plane of the future must combine beauty with utility in a way that neither is sacrificed for the other.

International aircraft are leading the field in this respect. Every ship is at once a marvel of engineering skill and a poem of graceful contour.

Building beauty into International aircraft does not in any way hamper the practicability of these ships. The delightful stream lines, making for beauty, also increase efficiency by eliminating head resistance.

COLORS AS YOU WISH THEM

International planes do not come in any one standard color. You may specify the colorscheme of your ship to suit your individual taste. This applies both to paint and upholstering.

DEALERS: International manufactures a complete line of aircraft. Ships of all types for any purpose. We believe that our product is the best obtainable both in design and construction. We solicit your investigation.

BUILT TO A STANDARD—NOT TO A PRICE

INTERNATIONAL AIRCRAFT CORPORATION
LONG BEACH, CALIF.

RUSSELL PARACHUTE

TESTS comprising more than one hundred drops with dead weight loads have proven the high efficiency of the Russell Lobe parachute harness and pack. Numerous jumps made with this parachute by navy, marine and commercial testers have resulted in the highest praise in each case for the entire equipment. Years of research and intensive development have resulted in the following outstanding features:

Lobe type canopy designed on aerodynamic principles giving positive rapid opening even under extremely fouled conditions.

Rapid opening without excessive shock load.

Maximum skirt extension under all air and load conditions.

Automatic compensation for load within body weight limits, assuring safe descent for abnormally slight and heavy persons.

Oscillation or swinging reduced to a minimum, assuring the greatest safety upon landing.

Ease of control during descent with means provided for partial collapsing and hastening descent. This exclusive feature decreases drift and permits avoiding danger from above.

Operates safely at one hundred feet, lessening the low altitude menace.

Excellent performance when packed by inexperienced persons, providing an extreme factor of safety.

The construction of the parachute and packs eliminates the necessity for repeated repacking in order to insure efficiency. Inspection and repacking every sixty days is sufficient to insure the proper functioning.

Materials used in constructing the Russell Lobe parachute conform to U. S. Government specifications. The silk fabric used is specially woven imported material of high tensile strength and light weight. The cords, twenty-four to each parachute, are specially woven of high quality silk, the tensile strength of each cord being 400 pounds. These cords are durable and will not exhibit picked threads after the most severe usage. The silk parachute is recommended for use in connection with any type of airplane and particularly for pursuit planes, where high speed performance and severe usage is demanded.

The Russell Lobe parachute is also constructed of cotton materials. The cotton fabric used is of light weight, yet high tensile strength, specially woven to meet Government test requirements. The cotton cord furnished with the cotton parachute is of 250-pound tensile strength and very durable. The cotton parachute is recommended for use in connection with the slower speed type of airplane, such as bombing planes, photographic, observation and training planes.

Both parachutes are equipped with the company's new improved adjustable harness and positive action, manually operated packs. The seat packs and soft back packs are compact and so connected with the harness as to insure maximum comfort to the wearer under flying conditions. They are entirely manually operated; a jerk of the release ring entirely freeing, as well as ejecting the parachute from the pack. This method of operation insures rapid positive action with minimum effort.

The packs are of twelve-ounce double-fill khaki duck, with .080 music wire pins. The joints are wrapped, soldered and tested; rip cord rings are made of seamless steel tubing, zinc plated, and are four inches in diameter.

The release ring and rip cord attachments are so constructed and connected with the pack and harness as to make it practically impossible to rip the pack except by actually manually pulling the ring, after same has been removed from its pocket.

The adjustable parachute harness is simplified to increase safety and insure maximum comfort. Loose, comfortable adjustment may prevail while seated, the harness automatically tightening when the wearer stands. The design is such that the seat strap is held in proper position while the parachute is in use.

The harness is built of specially woven three-ply linen web with a tensile strength of 2,750 pounds. All hardware is dropped forged, nickel steel, cadmium plated to prevent rust, and is tested to 2,500-pound load.

INTERNATIONAL F-17

THE International F-17, 3-place OX5 Sportster created much interest during the California Development Association Tour in May. Spectators and pilots were very much surprised to see it drop in at the various towns with three passengers and pilot and see it perform. One would think it was flying with a much larger motor. It was surprising to see an OX5 take off in such short space and climb the way it did.

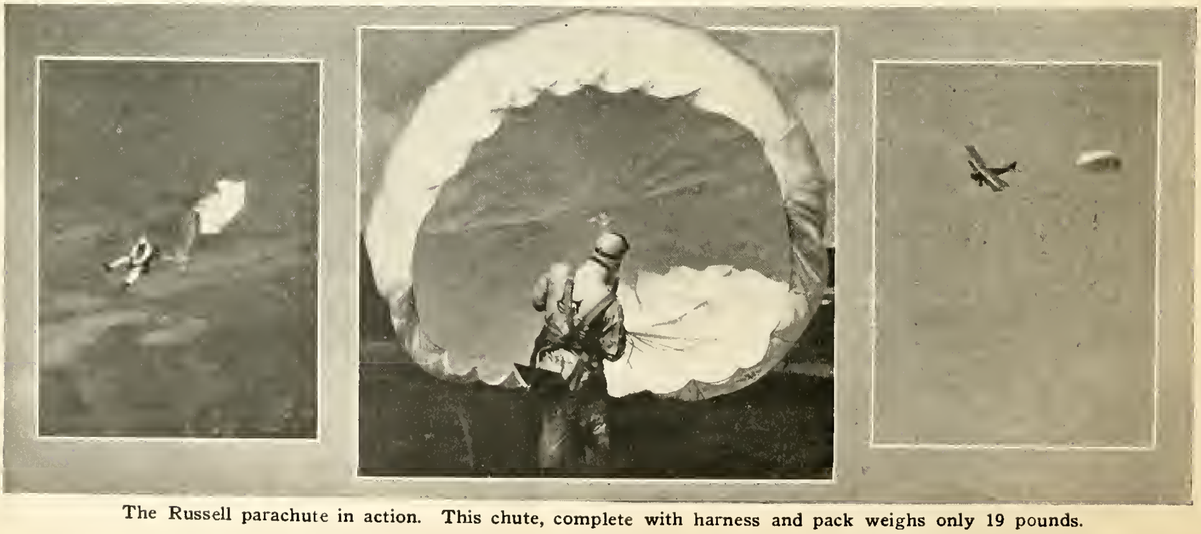
This ship is truly a very high-grade airplane both in performance and construction. Small details have been taken care of in a very complete manner. The passenger seat is 40 inches wide and is very comfortable. The upholstering in this compartment and also pilot's cockpit is finished in red leather and very deeply padded. A door is provided on the left hand side, making it very easy for passengers to get in and out.

The fuselage is octagon shape using bulkheads and eight spruce longerons which are covered with a very high-grade 3-ply plywood which is finished with lacquer.

The hydraulic split-type landing gear is the latest thing in landing gears and it is almost impossible to bounce this ship in landing. Wheel brakes are standard equipment and are operated with hand lever. Foot pedals are hooked up to braking mechanism with universal action which enables one to steer with brakes while taxying on the ground.

The radiator is something entirely new, being built in the top wing with expansion tanks forming leading edge of wing curve. With this installation the efficiency of the wing surface behind the radiator is not lost. Rudder and elevator controls are all enclosed, in fact all details of the ship are well streamlined which not only helps the appearance but also adds to its efficiency.

E. M. Fisk, the designer and engineer of this ship, has developed excellent stability. It can be flown for hours at a time without using the stick. Left and right hand turns can be made with rudder alone and it will resume normal flying angle, from any position, of its own accord.



The Russell parachute in action. This chute, complete with harness and pack weighs only 19 pounds.

IN THE FRONT LINE

BACH AIRCRAFT COMPANY

Clover Field Santa Monica

California

CONTACTS

By Frank E. Samuels

NOW that Frank A. Mason, Commander of Brea Post 181, American Legion of Honor, and formerly Commodore of the Brea Air Club, has been appointed on the new Aviation Committee of the Associated Chamber of Commerce, we can look for a lot of aviation activity throughout Orange County. Frank has always been a hustler for Orange County publicity, is well liked among the flying fraternity and is an all-round good fellow.

From all indications the West Coast is to be the scene of many big aviation events during the summer. Wherever I go the main subject of conversation is the Pacific flights. I doubt if there is one airplane manufacturer in this territory but what is building one or more planes for one of the flights—the San Francisco-Honolulu, the Los Angeles-Tokio, Pacific Coast-Hawaii and San Francisco-Manila flights. The New York-Spokane race is also creating considerable talk.

In my rounds of flying fields of Southern California, the owners of the fields tell the benefits they are deriving, both in passenger carrying and in the number of students that have enrolled since Colonel Lindbergh's flight. One manager showed me on the company's books where they have taken on an average of three new students every day, and every field in this territory has averaged one or more students a day since the flight. Passenger carrying was never better, pilots on the fields putting in as high as seven and a half hours in the air on Sundays, with week days almost as good. Long distance flights are daily occurrences, and most of the fields are engaging more pilots to take care of the business.

Lieut. Jack Fry, of the Aero Corporation of California, has just sold another Universal to the Pacific Air Transport, through Mr. Vernon Gorst, their general manager. The plane is to be equipped with a Pratt and Whitney "Wasp", and delivery will be made on or about July 1st.

At Clover Field, J. B. Alexander, sales manager of the American Aircraft Corporation, West Coast agents for "Wacos," pointed out to me the many improvements made in the Waco-10 over all previous models. The two-inch wider front cockpit with a door on the left side of the plane for the passengers' comfort; four ailerons instead of two, as on the old models; the higher landing gear equipped with regular Oleo shock absorbers; automatic stabilizers; and clean streamlines. The Waco-10 has been built with a safety factor to allow it to be powered with any motor from an OX5 up to a 250 h.p. motor. American Aircraft have oversold their June deliveries and will not be able to make deliveries before July.

Ted Woolsey has his new Thunderbird well under way and will commence assembling it within a few days. The new model is of much lighter construction than the old Thunderbird, and in my estimation is a much prettier ship. This ship is already sold, and if it gives the satisfaction to the makers that they are expecting, they will go on a production basis during the summer.

Rogers Airport, Los Angeles, is being prepared for planes which intend to make the Hawaii flight. The airport has a runway a mile long and for the next mile and a half no obstructions are in the way. Jim Webster reports "business never better, with new students enrolling daily."

I had the pleasure of a long flight with sales manager Spear of the International Aircraft Corporation, in their latest four-place F-18 Special. We made the rounds of the flying fields and everywhere the plane landed it drew favorable attention. Every minute we were in the air was a pleasure to me. Their factory is a busy spot at this time with full complement of experts turning out planes that are sold before they are finished.

Paul Richter, treasurer of the Aero Corporation of California, is taking a short vacation, combining pleasure with business. Like the letter carrier who on his day off went for a long hike in the mountains, so Paul, on his vacation, has gone on to Denver to fly a new Eaglerock back to Los Angeles for a customer who is in a hurry to take delivery. Paul is one of the kind that after a hard day carrying passengers, and just before dusk, will say, "Well, I guess I'll go for a little joy ride now."

Mr. Miller of the Miller Flying Service, Los Angeles, informs us that a number of student aviators, who have already soloed, are taking advantage of his offer to obtain necessary flying hours to qualify for pilots' licenses, and to brush up on their flying.

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EXCLUSIVE FEATURES

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No oscillation Slow landing speed
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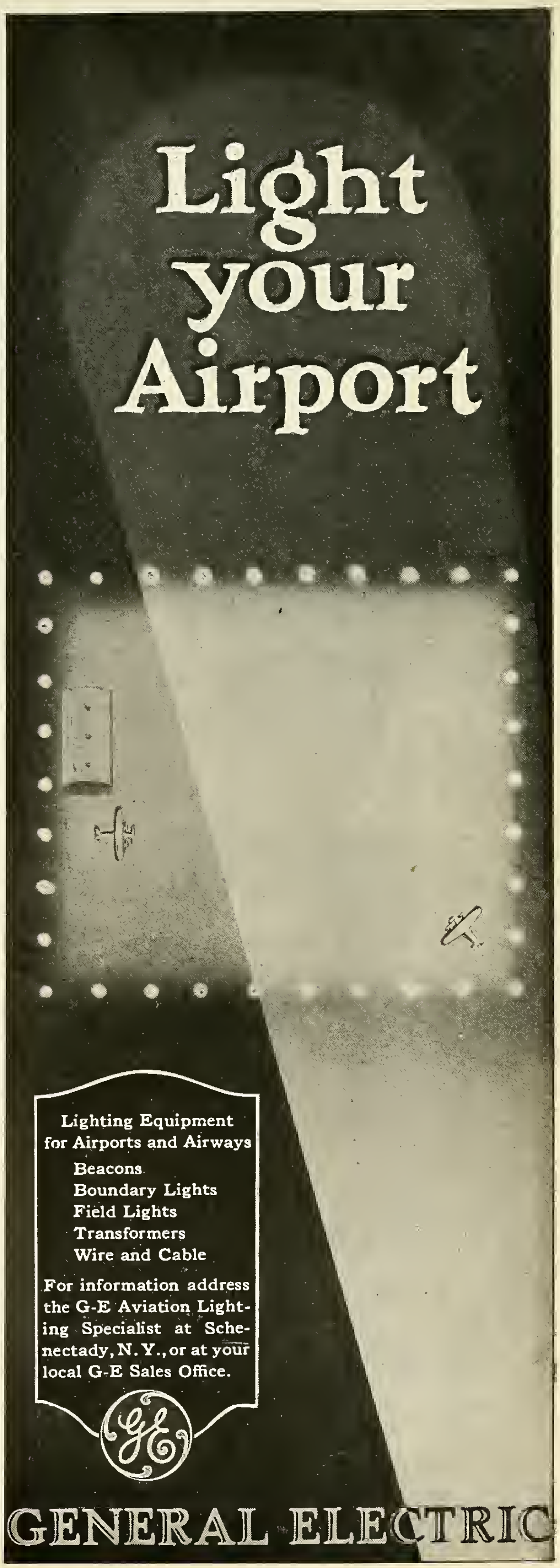

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KERN COUNTY DEVELOPING AIRPORTS

By Orval Adams

KERN County, California, the first county in the United States to establish a publicly owned airport, is making rapid strides to maintain its reputation as one of the leaders in California aviation.

With plans completed to install field equipment valued at $15,000 at the county airport north of Bakersfield, aviators and business men have again turned their eyes to the development of landing fields throughout the county.

On the west side in the heart of the Midway Sunset and Buena Vista oil fields, airports at three cities have been completed. They are at Maricopa, Taft and Fellows, each about 40 miles from Bakersfield and about 10 miles distant from each other. Bakersfield Airport serves as the hub of what eventually will be a complete chain of landing fields circumscribing the county. Present plans call for establishment of fields throughout the agricultural and mountain sections.

Kern county's second link in the Bakersfield-Mount Whitney airway was forged this month when a group of aviators and surveyors packed over mountain trails north and east of Kernville to survey a landing field at Big Meadow.

The chain of mountain landing fields was planned early this year. Advice was given by officials of the United States department of forestry and a route was outlined. A few weeks ago, the first unit was established at Kernville, mountain village at the foot of the high Sierra 50 miles northeast of Bakersfield.

The intervening plateau is southern California's greatest playground with its beautiful meadows, countless lakes and pine timberlands, teeming with wild game and networked by trout-filled streams of icy water.

The many meadows on the Whitney plateau are to be utilized as landing fields. Other fields to be established in the near future will be at Beach, Monache, Pendleton, Ramshaw, South Fork and Big Whitney meadows.

And while one group of aviation enthusiasts continues the work of establishing new fields in the county, the Kern County Airport Committee of the chamber of commerce continues its program of developing the airport at Bakersfield.

This month a terrific cyclone tore through the county. It hit the airport broadside, destroying the hangars and damaging six airplanes. The new hangars are to be all-steel, each with room to house 10 planes.

TRANS-PACIFIC EAGLEROCK PLANE

THE Alexander Aircraft Company are building a Whirlwind-motored Eaglerock for a trans-Pacific flight. The purchaser is the Tri-States Airways of Memphis, Tenn., in conjunction with the Bry-Block Mercantile Company of that city and the Memphis Press Scimitar, a Scripps Howard news sheet. Details and photographs of the job will be published later in Aero Digest.

EAGLEROCK RECORD AT THE RED CROSS MEET

THE Alexander Eaglerock made a very excellent showing at the Air Carnival at Clover field on May 22 which was staged for the benefit of the Red Cross Mississippi relief fund.

In the altitude contest Paul Richter in an Eaglerock climbed to an altitude of 2500 feet in 4 min. 12 sec. instead of 6 min. 12 sec. as reported in the July issue of Aero Digest.

The high speed event was also won by an Eaglerock, piloted by Art Goeble, making 25 miles in 15 min. 58¾ sec.

MILLER-WILLEY PORT

THE Miller and Willey Airport at Porterville, California, was opened February 1st of this year and is owned and operated by Leighroy Miller and Dr. H. J. Willey, both ex-service men and members of the local post of the American Legion.

The airport consists of 80 acres with a runway north and south, 900 yards long and 450 yards east and west. The entire field will be leveled in the near future.

Hops and passenger service may be had at the field, and a class of six are taking flying instructions at present. A Kinner Airster is used, Miller having the local agency as well as the northwest territory, consisting of Oregon, Washington, Idaho, and Montana, where he is establishing dealers.

All pilots are cordially invited to call at the airport.

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LEIGHROY (DUSTY) MILLER
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P. A. T. REPRESENTED BY FOSTER SERVICE

THE Pacific Air Transport Company has recently closed an agreement with the "Ask Mr. Foster Travel Information Service" for representation in all the larger cities in the United States.

This means that air travel is taking its place among the other established modes of travel. The convenience that this service will afford the traveler will result in increased patronage for the airline.

Pacific Air Transport is equipped with comfortable cabin planes.

There is no more beautiful route as viewed from the air than that between southern California and the Pacific Northwest. In fact, the broad sunlit valleys with their numerous orchards and vineyards between Los Angeles and San Francisco, the Tehachape Mountains, the broad expanse of the Sacramento Valley, north of San Francisco, and the snow-capped peaks of the Sierra, Cascade and Siskiyou Ranges, as seen from the air, are wonders never to be forgotten.

On the route of the Pacific Air Transport between Medford and Portland the passenger may view as never before miles and miles of primitive forests, numerous beautiful streams which are never seen from the highway or train, the wonderful Williamette Valley in Oregon with its numerous well-kept farms and orchards, and at practically all times five famous mountain peaks are so close in view that it would almost seem that he could reach out and touch them—these are Mount Shasta in California, Mount McLaughlin, and the Three Sisters, Mount Jefferson, Mount Hood in Oregon, and Mount St. Helens in Washington. As the plane nears Portland, it is possible in addition to the last three mountains named to also see Mount Adams and Mount Rainier.

Going north from Portland the route follows the famous Columbia River as far as Kelso, Washington, then turns due north, following along the west slopes of Mount St. Helens and Mount Rainier until Tacoma is reached, thence follows the shore line of Puget Sound to Seattle.

DULUTH AIR NEWS

By H. A. Lindbergh

DULUTH, the head of the Lakes port, is getting in step with the rest of the progressive communities throughout the country that are interested in the development of aviation.

The airport, on which hangars have recently been erected, will serve both Duluth and Superior. It is located near the bay front of western Superior and is conveniently reached by street car or by the main highway connecting the Twin Ports.

A. J. Hase, president of the Arrowhead Airways, Inc., will be in charge with Eddie Middagh as flight pilot.

Passenger service to Duluth and Superior has been inaugurated and student instruction together with the usual hopping of passengers will be carried on regularly.

SPOKANE AIR NEWS

THE North Pacific Airways, Inc., was recently organized at Spokane, Wash. Nick Mamer, Norman Warsinske and I. W. Chapman are the board of directors. It is a commercial concern which will establish freight and passenger air service between Spokane and other large Pacific northwest cities and also establish an aircraft sales and repair headquarters in Spokane.

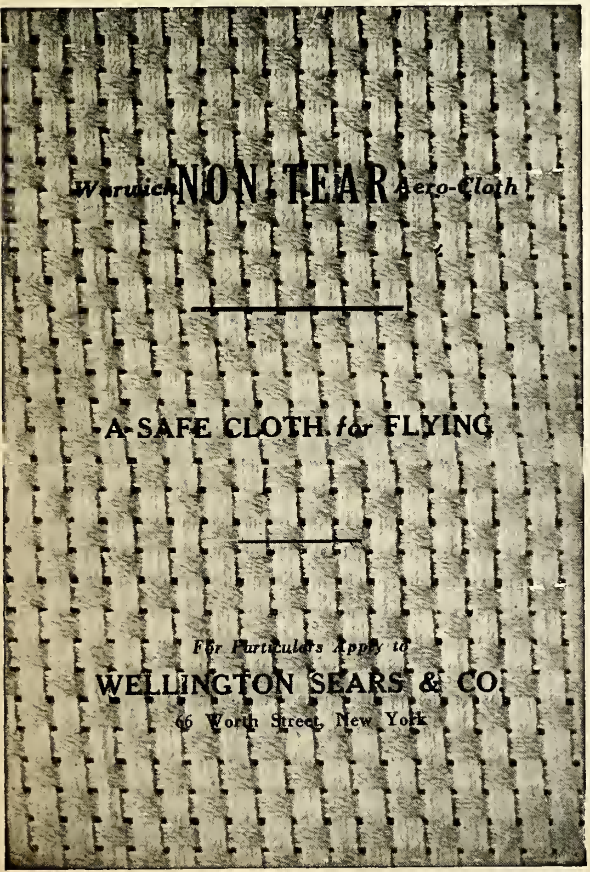
Mr. Mamer has been engaged in commercial aviation in the Pacific Northwest, with headquarters in Spokane, for several years. He conducts an aviation school, is also engaged in commercial work, including government forest patrol, and has been a selling agent for airplanes.

An important part of the expansion is the plan to establish commercial airways between Spokane, Portland and Seattle.

Lieut. Ben Eielson, chief pilot with the Wilkins Arctic Expedition, was the first entry in the proposed Seattle-Tokio flight. He plans to fly alone.

A prize of $25,000 is offered by Seattle citizens to the first pilot flying a heavier-than-aircraft flying from Seattle to Tokio or vice-versa on or before June 1, 1932.

Thomas Stinson is chairman of flight committee. Others on the committee are: Lieut. Comdr. J. H. Chapman, commander of the naval unit at Sand Point, Lieut. T. J. Koenig, A. S. Eldridge, Frank Fretwell, Phil Johnson, Maj. H. C. K. Muhlenberg, A.C., C. M. Perkins and J. M. Sparkman.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is equipped with the New Kinner 100 h.p. 5 Cyl., Radial Air-cooled Motor and will out perform any other three placed commercial plane on the market up to 100 h.p. Motor equipped with two Scintilla Magnetos and Zenith Carburetor.

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NEWS OF THE AIR SERVICES

CURTISS "HAWKS" ESCORT LINDBERGH

COLONEL CHARLES LINDBERGH'S aerial escort, on his flight from Washington to New York, June 13th, consisted of twenty-one Curtiss "Hawk" pursuit planes, flown by pilots of the First Pursuit Group at Selfridge Field, under command of Major Thomas J. Lanphier.

When difficulty was experienced with his own "Spirit of St. Louis", Lindbergh, too, climbed into a Curtiss "Hawk" and led the formation on the flight from Bolling Field to Mitchel Field. The 240-mile journey was made in two hours and four minutes.

On Thursday, June 16th, Lindbergh, accompanied by Lt. St. Claire Streett, both flying Curtiss "Hawks", left Mitchel Field at three o'clock in the morning and flew to Washington where Lindbergh picked up the "Spirit of St. Louis" and flew it back to Mitchel Field.

The same day, Thursday, the escort of twenty-one "Hawks" left Mitchel Field at eleven o'clock in the morning and flew to Washington. Here the pilots had lunch and then pushed on to Dayton. They stayed overnight in Dayton and on Friday convoyed Lindbergh from Dayton to St. Louis.

SEC'Y DAVISON'S TOUR

ASSISTANT SECRETARY OF WAR F. TRUBEE DAVISON, on June 7 completed an inspection trip which covered practically all of the principal air stations in the United States, a flying distance of approximately 6,000 miles and including air corps activities on the west coast.

While at San Antonio, Mr. Davison attended the air corps maneuvers which were highly successful. One of the most outstanding flights in the history of military aviation was made by 18 Curtiss P-12 of the First Pursuit Group in flying from Selfridge Field, Mt. Clemens, Mich., the northern border of the United States, to San Antonio, the southern border, in the elapsed time of 13 hours at the rate of 126 miles an hour. The planes took off and landed together, carrying their full military load, and experienced no trouble whatsoever. 109 airplanes started for San Antonio and 108 arrived from Air Corps stations all over the United States, flying a distance of 286,300 miles with but one minor accident.

Mr. Davison found people on the west coast air-minded and thoroughly alive to the possibilities of commercial aviation.

THE CHENEY AWARD

THROUGH the generous action of the relatives of an officer of the Army Air Corps who lost his life in the World War, an award, consisting of a suitably engraved plaque and a cash sum, is to be made annually to members of the United States Army Air Corps or of the U. S. Army Air Corps reserve for an act of valor or of extreme fortitude or self-sacrifice in a humanitarian interest, which act was in connection with aircraft. This act need not necessarily be of a military nature.

This annual gift, to be known as the "Cheney Award," has been made possible through the high motives and sympathetic interest in the Army Air Corps of the mother and sister of Lieut. Cheney, who with two other aviators was killed in an airplane collision during a fog on January 20, 1927. At that time Lieut. Cheney was serving in Italy as a member of the first group of American fliers to be sent to the aviation camp at Foggia in that country. He was the first American aviator to complete the Italian military flying brevet, having received that honor on October 18, 1917.

Mrs. William H. Schofield, of Peterborough, N. H., mother of the deceased aviator, and Mrs. Thomas W. Streeter, of Morristown, N. J., his sister, have jointly set aside a trust fund of $10,000, the interest accruing therefrom to be used as the means of making up the cash award as well as the award of the plaque. A die of suitable design has been made and bronze plaques will be struck off each year the award is made, engraved with the name of the recipient or recipients, as determined by the Cheney award board. Accompanying the presentation of this annual gift will be a certificate of award setting forth the general purpose of the award.

NAVY CONTRACTS FOR 39 WASP ENGINES

THE Navy Department awarded to the Pratt & Whitney Aircraft Company of Hartford, Conn., a contract for thirty-nine Wasp nine-cylinder, 410 horsepower, air-cooled engines at a total cost of $377,087.

The engines which will be installed in the Vought "Corsair" planes for shipboard use are similar to those used in the planes that recently established five new seaplane records for the Navy.

THE NATIONAL GUARD AIR CORPS UNITS

THERE are at present in this country 16 Federally recognized observation squadrons and photo sections, the organizational scheme being the Division Air Corps consisting of one squadron and one photo section for each 18 Infantry Divisions. The budget for 1928 provides for an additional Division Air Corps, while another is provided in the tentative estimates for the fiscal year 1929.

Units of the National Guard Air Corps, their location, composition, etc., are given below, as follows:

26th Division, Massachusetts National Guard, Boston, Mass. (101st Observation Squadron, 101st Photo Section and Medical Detachment), Major Charles H. Wooley, commanding. Commissioned personnel numbers 17, including one medical officer. Of these officers, 13 are rated pilots, 2 observers and 2 not rated. Lieut. Clarence E. Shankle, Air Corps, is the instructor.

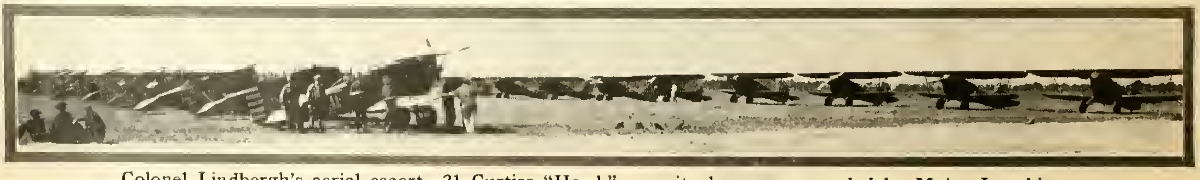
27th Division, New York National Guard (102nd Observation Squadron and 102nd Photo Section), Major George A. Vaughn, commanding, is stationed at Miller Field, New Dorp, Staten Island, N. Y. The commissioned personnel number 17, including one medical officer. Lieut. Marion L. Elliott, Air Corps, is the instructor.

28th Division, Pennsylvania National Guard (103rd Observation Squadron, 103rd Photo Section and Medical Detachment), Major John S. Owens, commanding, has 16 commissioned officers. Lieut. Earle J. Carpenter, Air Corps, is the instructor. The Philadelphia Municipal Airport is used as the flying field. It was secured by the city at a cost of $250,000. An additional sum of $15,000 was spent on grading and leveling the field, and it is contemplated spending $5,000 more for this purpose this year.

29th Division, Maryland National Guard (104th Observation Squadron, 104th Photo Section and Medical Detachment) is commanded by Major W. D. Tipton, and has 24 commissioned officers and 94 enlisted men. Captain E. C. Black, Air Corps, is the instructor. Logan Field, Dundalk, Md., is used as the flying field.

30th Division, Tennessee National Guard (105th Observation Squadron, 105th Photo Section and Medical Detachment), Major John C. Bennett, Jr., commanding, and 1st Lieut. Wm. V. Andrews, Air Corps, in-

(Continued on page 84)



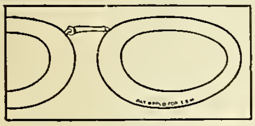
Colonel Lindbergh's aerial escort—21 Curtiss "Hawk" pursuit planes, commanded by Major Lanphier.

MEYROWITZ LUXOR GOGGLES

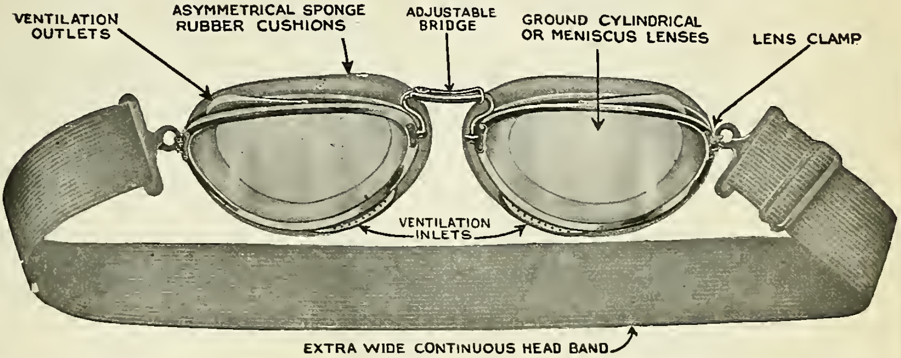
MEYROWITZ LUXOR GOGGLES No. 6

U. S. Air Service Model

With ground polished and cylindrical bent white lenses	$10.75
With ground polished and cylindrical bent Amber or Euphos (green) tinted lenses	12.75
With hand ground Meniscus white lenses	15.00
With hand ground Meniscus Amber or Euphos (green) tinted lenses	16.50
	per pair
Ground, polished and cylindrical bent white lenses	4.00
Ground, polished and cylindrical bent Amber or Euphos (green) tinted lenses	5.00
Hand ground Meniscus white lenses	8.00
Hand ground Meniscus Amber or Euphos (green) tinted lenses	9.50
Continuous head band, 1⅛" wide, each	1.50
Sponge rubber cushions, per pair	2.50



The small cut shows the asymmetrical shape of the Meyrowitz Patented Sponge Rubber Cushion. These cushions prevent air seepage.


VENTILATION OUTLETS
ASYMMETRICAL SPONGE RUBBER CUSHIONS
ADJUSTABLE BRIDGE
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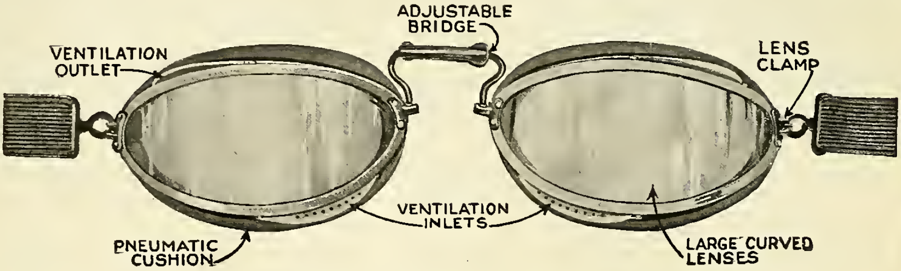
LENS CLAMP
VENTILATION INLETS
EXTRA WIDE CONTINUOUS HEAD BAND

MEYROWITZ LUXOR GOGGLES No. 6—U. S. Air Service Model

Your goggles are as important as your landing gear. They must be just as dependable. Lens must be ground and carefully formed to prevent distortion.

LUXOR GOGGLES No. 6

Luxor Goggles No. 6 with first quality white lenses	$9.75
Luxor Goggles No. 6 with first quality tinted Amber or Euphos (green)	10.50
Luxor Goggles No. 6 with hand ground Meniscus white lenses	15.00
Luxor Goggles No. 6 with hand ground Meniscus tinted Amber or Euphos (green)	16.50
	per pair
White lenses	$1.50
Tinted Amber or Euphos (green) lenses	2.00
Pneumatic Cushions	2.00 each
Two-piece Head Band	1.00

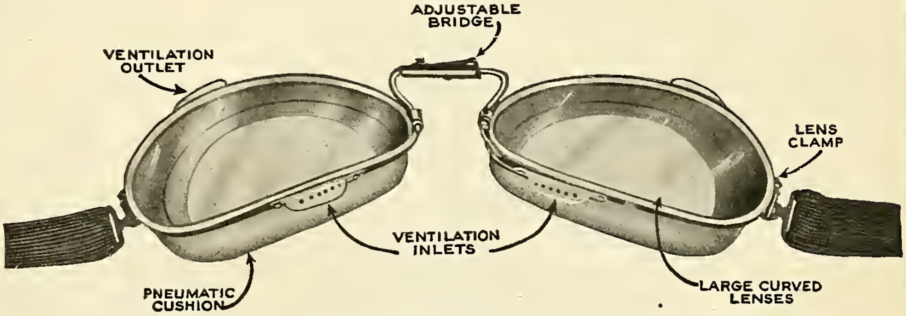


LUXOR GOGGLES No. 6—Regular Model

Your goggles must give unobstructed vision to the sides, as well as ahead. Frame-work must be light and cushioned to prevent pressure.

LUXOR GOGGLES No. 5

Luxor Goggles No. 5 with first quality white lenses	$6.75
Luxor Goggles No. 5 first quality tinted Amber or Euphos (green)	7.50
	per pair
White lenses	1.50
Amber tinted or Euphos (green) lenses	2.00
Pneumatic Cushions	2.00 each
Two-piece Head Band	1.00



LUXOR GOGGLES No. 5

Insist on Genuine LUXOR Goggles, send for descriptive folder

Worn by these famous Aviators: Com. R. E. Byrd, Lieut. Walter Hinton, Capt. "Eddie" Rickenbacker, Lieut. George Noville, Floyd Bennett, Col. Lindbergh and others.

E. B. Meyrowitz
INCORPORATED
Established 1875

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520 Fifth Avenue at 43rd Street, New York City

(Continued from page 82)

structor, is stationed at Blackwood Field, Nashville, Tenn. The commissioned personnel of 24, including the Flight Surgeon, are, with the exception of two, rated, there being 6 Airplane Pilots, 13 Junior Airplane Pilots and 3 Observers.

31st Division, Alabama National Guard (106th Observation Squadron, 106th Photo Section and Medical Detachment), Major Sumpter Smith, commanding, and Captain Asa N. Duncan, Air Corps, instructor, is stationed at Birmingham, Ala. Roberts Field in that city is used as the flying field. The commissioned personnel total 22.

32nd Division, Michigan National Guard (107th Observation Squadron, 107th Photo Section and Medical Detachment), Major Floyd E. Evans, commanding, and 1st Lieut. Edgar T. Selzer, Air Corps, instructor, comprises 14 officers, including Flight Surgeon. The field used is part of Rouge Park, owned by the City of Detroit, located about 11 miles from the City Hall but not more than 7 miles from the center of the residential district. It is about two miles due north of the Ford Airport. In addition to their new Truscon steel hangar, the squadron has built with squadron funds two other buildings adjoining it, one to accommodate the headquarters of the Squadron and the other the headquarters and supplies of the Photo Section, the Squadron supplies, a machine shop and class room.

34th Division, Minnesota National Guard, St. Paul, Minn. (109th Observation Squadron and 109th Photo Section), Major Ray S. Miller, commanding, is stationed at Chamberlain-Wold Field. A total of 19 officers comprise the commissioned personnel, 1st Lieut. George M. Palmer, Air Corps, being the instructor. There are 15 rated pilots in this organization.

35th Division, Missouri National Guard (110th Observation Squadron, 110th Photo Section and Medical Detachment), Major Charles R. Wassall, commanding, and Capt. Harry H. Young, Air Corps, instructor, uses Lambert Field, St. Louis, Mo., as their flying field. Seventeen officers comprise the commissioned personnel.

36th Division, Texas National Guard (111th Observation Squadron, 111th Photo Section and Medical Detachment), Major Bernard A. Law, commanding, and 1st Lieut. Walter H. Reid, Air Corps, instructor, has a commissioned personnel of 17, including one medical officer. Ellington Field, Houston, Texas, is used as the flying field.

38th Division, Indiana National Guard (113th Observation Squadron, 113th Photo Section and Medical Detachment), is commanded by Major Richard F. Taylor, and has a commissioned personnel of 20, including Flight Surgeon. Captain Harvey W. Cook, Air Corps, is the instructor. With the exception of the Flight Surgeon, all officers are rated, 18 being Junior Airplane Pilots and one Observer. The new municipal airdrome at Indianapolis, Ind., is used.

40th Division, California National Guard (115th Observation Squadron, 115th Photo Section and Medical Detachment), Major Corliss C. Moseley, commanding, comprises 13 officers, including one medical officer. Griffith Park, Los Angeles, Cal., is used as the flying field.

41st Division, Washington National Guard (116th Observation Squadron, 116th Photo Section and Medical Detachment), Major John T. Fancher, commanding, has a commissioned personnel of 17, Lieut. Caleb V. Haynes, Air Corps, being the instructor. Parkwater Field, Spokane, Washington, is used as the flying field.

43rd Division, Connecticut National Guard (118th Observation Squadron, 118th Photo Section and Medical Detachment), Major William F. Ladd, commanding, and 1st Lieut. Louis N. Eller, Air Corps, instructor, has a commissioned personnel of 18, including Flight Surgeon. The Municipal Field at Hartford, Conn., is used as the flying field.

45th Division, Colorado National Guard (120th Observation Squadron, 120th Photo Section and Medical Detachment), is commanded by Major Wm. H. Dayton. The commissioned personnel totals 26 officers, including Flight Surgeon. Captain Floyd N. Shumaker and 1st Lieut. Charles G. Brenneman, Air Corps, are the instructors. Lowry Field, Denver, Colo., is used as the flying field. One separate flight of the Squadron is stationed at Pueblo, Colo.

154th Observation Squadron, Arkansas National Guard, is commanded by Major Asbury W. Meadows, 1st Lieut. Leland R. Hewitt, Air Corps, being the instructor. There are 13 commissioned officers in this organization, and the Little Rock Airport is used as the flying field.

WILBUR COMMENDS OFFICERS ON ENGINE

Says Air-Cooled Engine Has Revolutionized Flying

SECRETARY WILBUR commended Commander E. E. Wilson and Lieut. Commander Bruce G. Leighton of the Bureau of Aeronautics for their work in connection with development of the air-cooled aircraft engine. Letters to be attached to their records were sent to these officers by Mr. Wilbur, who declared that recent flights had demonstrated that this engine is superior to all others in flying and has added greatly to the safety of airplanes.

"Recent flights of American aircraft have demonstrated that the United States is in the forefront of aeronautic development. These flights, beginning with that of Commander R. E. Byrd, U. S. N., (retired) to the North Pole and return, and continuing through those of Colonel Charles A. Lindbergh from New York to Paris, Clarence Chamberlin and Charles Levine from New York to near Berlin, and Lieutenants Lester J. Maitland and A. F. Hegenberger, U. S. Army Air Corps, from San Francisco to Honolulu, the transatlantic flight of Commander R. E. Byrd, U. S. N., (retired) have all been made with Wright 'Whirlwind' air-cooled engines. It appears to be a fitting time for the Navy Department to officially recognize your part in the development of the engine which has made these achievements possible.

"Besides standing out as striking examples of the skill, courage and flying ability of American aviators, these epochal flights are a measure of the high state of development of the American aeronautical material. This is particularly true of the new air-cooled engines which have proved themselves so capable of handling heavy loads and so dependable in service," said the Secretary of the Navy.

In giving a history of the steps that led to development of the new motor he said it was the turning point in the art of flying. It was more than seven years ago when the Wright Company first proposed the air-cooled radial form of engine, and was supported by Lieut. Commander Leighton, then in charge of the Engine Section of the Bureau of Aeronautics.

"Three years ago Commander Leighton was relieved by Commander Wilson, who continued the development of the 'Whirlwind' engine to the point where it became widely used commercially because of its durability and dependability. Commander Wilson further brought about development of the Pratt and Whitney 'Wasp' engine, a 400-horsepower, radial air-cooled engine with which the United States recently brought back five world's seaplane records, including two altitude records and three speed records. Commander Wilson further directed the development of the Pratt and Whitney 'Hornet', 500-horsepower radial and the Wright 'Cyclone', also a 500-horsepower engine. It was the Pratt and Whitney 'Hornet' which solved the problem of the Navy's combined scouting, torpedo and bombing airplane.

"Simultaneously with the development of the engines, the development of new airplanes has gone along until now our Navy is in possession of fighting observation and bombing planes which are without a superior. The air-cooled engine has made all this possible."

In his letter to Commander Wilson referring to the Pratt and Whitney engines, Secretary Wilbur said in part:

"The records show that about three years ago you relieved Lieut. Commander Bruce G. Leighton, U. S. N., in charge of the Bureau of Aeronautics and took over the development of the air-cooled aircraft engines, initiated by him.

"The records further show that you initiated and carried through to a successful conclusion, through the Pratt & Whitney Aircraft Company, the development of the Pratt & Whitney 'Wasp' and 'Hornet' engines which have recently brought back to the United States two world's seaplane altitude records and three world's seaplane records for speed. As a result of this engine development, you have made possible and have assisted in the design of modern naval fighting, observation and bombing aircraft which appear to be without superior anywhere.

"I desire therefore to express to you the Navy Department's appreciation of the part you have played in this work and to commend you for the zeal, initiative, engineering talent and high order of executive ability that you have displayed."

Lt. Freri demonstrating the Salvator Parachute to Gen. Piccio and His Excellency Mussolini

SALVATOR PARACHUTES

are the strongest and absolutely faultless, although the least cumbersome. Adopted by the Italian Royal Air Force. (Regia Aeronautica)

Showing the compactness of the Salvator Parachute

S. A. BREVETTI, AERONAUTICI SALVATOR,
Via in Lucina 15, ROME. *Telegrams* – PARACADUTE

ARMY AND NAVY AIR SERVICE ORDERS

ARMY AIR CORPS ORDERS

THE following Army Air Corps orders have been issued as of the dates indicated in brackets:

Allen, 2d Lt. Conrad, Reserve, to active duty for training, reporting to Crissy Field, Presidio of San Francisco, Calif. (May 31)

Arnold, Maj. Henry H., leave of absence 10 days. (June 16)

Barnett, 1st Lt. Lloyd, relieved from further assignment at Crissy Field, Calif., detailed as instructor of Air Corps, Alabama National Guard, with station at Birmingham, Ala. (June 22)

Barry, Maj. Archie W., relieved in office of Chief of Air Corps, ordered to Scott Field, Ill. (June 15)

Behncke, 1st Lt. David Louis, Reserve, to active duty, reporting to Langley Field, Fort Hampton, Va., for duty with Air Corps. (May 28)

Bertrandias, 1st Lt. Victor E., relieved from assignment at McCook Field, Dayton, Ohio, to report for duty at Douglas Aircraft Company, Santa Monica, Calif. (May 25)

Bunge, 1st Lt. Werner Otto, Reserve, to active duty, reporting to Langley Field, Fort Hampton, Va., for duty with Air Corps. (May 28)

Cook, Orval R., 2d Lt., promoted to 1st Lt. (June 4)

Couch, 2d Lt. Howard H., stationed at Scott Field, Ill., assigned as student in Air Corps Balloon and Airship School, same post. (June 21)

Davidson, Howard G., 2d Lt., promoted to 1st Lt. (June 4)

Davis, Maj. Michael F., graduated from Command and General Staff School, Fort Leavenworth, Kan. (June 22)

Doxey, 2d Lt. William Sanford, Reserve, ordered to active duty, proceeding to Maxwell Field, Ala., for duty with a tactical unit of Air Corps. (June 18)

Duncan, Capt. Asa N., relieved from duty as instructor, Alabama National Guard, ordered to Langley Field, Va. (June 22)

Ellicott, 1st Lt. Charles Glendower, Reserve, ordered to active duty, reporting to Crissy Field, Presidio of San Francisco, Calif., for service with 91st Observation Squadron. (June 18)

Ellis, Capt. Robert Edmonston, Reserve, to active duty, reporting at Bolling Field, Anacostia, D. C., for training. (June 15)

Farran, 1st Lt. Dean, Reserve, ordered to active duty, reporting to Crissy Field, Presidio of San Francisco, Calif., for service with 91st Observation Squadron. (June 18)

Floyd, 2d Lt. Ray B., relieved from detail in Air Corps, assigned to 38th Infantry, Fort Sill, Okla. (June 21)

Frese, 2d Lt. Henry August, Reserve, to active duty, reporting to Maxwell Field, Montgomery, Ala., for training. (May 28)

Gaines, 1st Lt. Edmund P., relieved from duty at Air Corps Engineering School, McCook Field, Dayton, Ohio, to represent Air Corps at Curtiss Aeroplane and Motor Company, Garden City, Long Island, N. Y. (June 3)

Gass, 2d Lt. Wentworth, Reserve, to active duty for training, reporting to Crissy Field, Presidio of San Francisco, Cal. (May 31)

Hanley, Major Thomas J., jr., leave of absence 15 days. (June 14)

Hebbard, 1st Lt. Albert F., now at Walter Reed General Hospital, ordered to proceed to his home to await retirement. (May 27)

Hefferman, Maj. Leo G., graduated from Command and General Staff School, Fort Leavenworth, Kan. (June 22)

Hickman, Maj. Horace M., graduated from Command and General Staff School, Fort Leavenworth, Kan. (June 22)

Homewood, 2d Lt. John W., relieved from duty with 2d Division, Fort Sam Houston, Tex., assigned to duty with 12th Infantry, Fort Washington, Md. (June 9)

House, Edwin J., 1st Lt., promoted to Captain. (June 4)

Hunter, 1st Lt. Frank O., relieved from duty at Selfridge Field, Mt. Clemens, Mich., to report to Chief of Air Corps. (June 13)

Hydshaw, 1st Lt. Silas C., Letterman General Hospital, San Francisco, ordered to proceed to his home to await retirement. (June 17)

Ingalls, 2d Lt. Fred A., stationed at Scott Field, Ill., assigned as student in Air Corps Balloon and Airship School, same post. (June 21)

Jones, Maj. Byron Q., graduated from Command and General Staff School, Fort Leavenworth, Kan. (June 22)

Jones, 2d. Lt. George Albert, jr., Reserve, to active duty for training, reporting to Crissy Field, Presidio of San Francisco, Cal. (May 31)

Kenney, Capt. George C., graduated from Command and General Staff School, Fort Leavenworth, Kan. (June 22)

Kiehurtz, 2d Lt. Rowland, relieved from duty as student in Air Corps, Advanced Flying School, Kelly Field, Tex., ordered to Scott Field, Ill. (June 16)

Knerr, Maj. Hugh J., graduated from Command and General Staff School, Fort Leavenworth, Kan. (June 22)

Lindsay, 2d Lt. Gregg M., transferred to Field Artillery, Second Division, Fort Sam Houston, Texas. (June 3)

Loomis, 2d Lt. Archie Ray, Reserve, to active duty for training, reporting to Crissy Field, Presidio of San Francisco, Cal. (May 31)

Lyon, Maj. Edwin B., graduated from Command and General Staff School, Fort Leavenworth, Kan. (June 22)

Mann, 1st Lt. Merrill D., relieved from detail with Organized Reserves of the Sixth Corps Area, detailed as instructor, 33rd Division Air Corps, Illinois National Guard. (June 14)

Milling, Maj. Thomas DeW., graduated from Command and General Staff School, Fort Leavenworth, Kan. (June 22)

Morris, 1st Lt. David A., Corps of Engineers, detailed to Air Corps, ordered to duty training in Air Corps, Primary Flying School, Brooks Field, Tex. (June 16)

Mullins, Capt. Charles L., jr., relieved from duty with Second Division, assigned to 25th Infantry, Camp Harry J. Jones, Douglas, Arizona. (May 26)

Pyle, 1st Lt. Carl W., relieved from duty at Fairfield, Ohio air intermediate depot, to report to March Field, Riverside, Calif. (June 7)

Reese, 1st Lt. Lewis R. P., relieved from further treatment at Walter Reed General Hospital, to rejoin his station to McCook Field, Ohio. (June 21)

Rice, 2d Lt. Herbert Everett, Reserve, ordered to active duty, reporting to Marshall Field, Fort Riley, Kansas for training. (June 16)

Smith, 1st Lt. Harold D., leave of absence 2 months. (June 10)

Soper, 2d Lt. Joseph Clare, Reserve, to active duty, reporting to Selfridge Field, Mount Clemens, Mich., for duty. (May 28)

Spry, James W., 2d Lt., promoted to 1st Lt. (June 4)

Woodward, 1st Lt. Mark W., relieved from assignment to Massachusetts Institute of Technology, assigned to Aberdeen, Md. (June 18)

NAVY AIR SERVICE ORDERS

THE following Navy air orders have been issued as of the dates indicated in brackets:

Alexander, Lt. (j.g.) Charles S., detached Torp. & Bombing Plane Sqdn. 1, Aircraft Sqdns., Sctg. Flt., to *U. S. S. Wright.* (June 6)

Austin, Ens. Clanton E., detached *U. S. S. Gilmer,* to temporary duty Nav. Air Sta., Pensacola, Fla. (May 27)

Clark, Lt. Joseph J., orders January 31, 1927, to *Lexington-Saratoga* detail, Nav. Air Sta., Nav. Oper. Base, Hampton Roads, Va., revoked; to continue duty VO Sqdn. 2, (*U. S. S. Mississippi*), Aircraft Sqdns., Battle Flt. (June 10)

Clay, Lt. Comdr. Alfred T., detached Nav. War College, Newport, R. I., Off. in Chg. Recruiters' Trng. School, Nav. Trng. Sta., Nav. Oper. Base, Hampton Roads, Va. Orders April 27, 1927, to Nav. Air Sta., Nav. Oper. Base, Hampton Roads, Va., revoked. (June 6)

Cummings, Lt. Arthur H., to duty *U. S. S. Aroostook.* (June 13)

Davis, Lt. (j.g.) William P., detached VO Sqdn. 6, Aircraft Sqdns., Sctg. Flt., Nav. Air Sta., Nav. Oper. Base, Hampton Roads, Va., to *U. S. S. Oklahoma.* (June 11)

deBaun, Lt. George H., detached Harvard University, Cambridge, Mass., to Nav. Air Sta., Anacostia, D. C. (June 10)

Edwards, Ens. Steve V., detached Nav. Air Sta., Anacostia, D. C., to *U. S. S. Florida.* (May 27)

Farnsworth, Lt. Comdr. John S., orders February 8, 1927, to Nav. Aircraft Central Dist., McCook Field, Dayton, Ohio, revoked; to duty with VO Sqdn. 6. Aircraft Sqdns. Sctg. Flt. (June 2)

Fish, Lt. Guy (M.C.) detached Nav. Air Sta., San Diego, Calif., to Nav. Air Sta., Pearl Harbor, T. H. (June 16)

Friedrick, Capt. Ernest, detached Nav. War College, Newport, R. I., to Rec. Ship, New York. Orders May 20, 1927, to Nav. Air Sta., Pensacola Fla. revoked.

Hardison, Lt. Comdr. Osborne B., detached Naval Academy, to VF Sqdn. 5, Aircraft Sqdns., Sctg. Flt. (May 28)

Hopkins, Ens. Howard V., detached Nav. Air. Sta., Pensacola, Fla., to duty with VF Sqdn. 6, Aircraft Sqdns., Battle Flt. (May 26)

Johnston, Lt. Bates H., detached VS Sqdn., Aircraft Sqdns., Sctg. Flt., to asst. inspr. of Nav. Aircraft, Buffalo, N. Y. (June 6)

King, Capt. Ernest J., detached Nav. Air Sta., Pensacola, Fla., to command *U. S. S. Wright.* (June 9)

Kirkland, Ens. Thomas J., jr., detached VO Sqdn. 6, Aircraft Sqdns., Sctg. Flt. to *U. S. S. Oklahoma.* (June 11)

Lindsay, Lt. (j.g.) Mellish M., jr., detached *U. S. S. Langley,* to *U. S. S. Colorado.* (June 11)

Lonnquest, Lt. Theodore C., orders January 22, 1927, modified to add'l. duty connection aeronautical navigational instrument, U. S. Nav. Obs., Washington, D. C. (June 20)

Olney, Lt. (j.g.) Alfred C., jr., detached VO Sqdn. 3, (*U. S. S. Detroit*), Aircraft Sqdns., Sctg. Flt., to temporary duty Navy Rifle Team, Wakefield, Mass. (June 7)

Pennoyer, 1st Comdr. Ralph G., detached Bur. Aero., Navy Dept., to Office of Judge Advocate General, Navy Dept. (June 9)

Peterson, Lt. William L., detached VO Sqdn. 3 (*U. S. S. Concord*), Aircraft Sqdns., Sctg. Flt., to Nav. Air Sta., Coco Solo. (June 11)

Pownall, Lt. Comdr. Charles A., orders July 12, 1926, modified, to c.f.o. *U. S. S. Saratoga.* (June 10)

Radford, Lt. Comdr. Arthur W., detached VO Sqdns. 1 (*U. S. S. Pennsylvania*), Aircraft Sqdns., Battle Flt., to 11th Nav. Dist., San Diego, Calif. (June 10)

Ramsey, Lt. Logan C., detached Hydro. Off., Navy Dept., to VT Sqdn. 2, Aircraft Sqdns., Battle Flt. (June 8)

Scheffel, Lt. Malcolm F., detached Bu. Aero., to Aircraft Sqdns., Sctg. Flt. (June 22)

Schildhauer, Lt. Clarence H., detached VS Sqdn. 2, Aircraft Sqdns., Battle Flt., to Aircraft Sqdns., Sctg. Flt. (June 11)

Simard, Lt. Cyril T., orders March 22, 1927 to VO Sqdn. 2, Aircraft Sqdns., Battle Flt., revoked; to temporary duty Leech Lawn Tennis Team, Naval Academy. (May 27)

Stonestreet, Lt. Martin B., detached VS Sqdn. 2, Aircraft Sqdns., Battle Flt., to Aircraft Sqdns., Sctg. Flt. (June 11)

Storrs, Lt. (j.g.) Aaron P. 3d, orders January 31, 1927, to *Lexington-Saratoga* detail, Nav. Air Sta., Nav. Oper. Base, Hampton Roads, Va., revoked; to continue duty VF Sqdn. 6, Aircraft Sqdns., Battle Flt. (June 11)

Taylor, Ens. Joseph I., detached VO Sqdn. 6 (*U. S. S. Florida*), Aircraft Sqdns., Sctg. Flt., to Nav. Air Sta., Hampton Roads, Va. (June 11)

Teller, Ens. Myron S., detached VO Sqdn. 6 (*U. S. S. Texas*), Aircraft Sqdns., Sctg. Flt., to VO Sqdn. 2, Aircraft Sqdns., Battle Flt. (May 25)

Thomas, Lt. William D., detached command VO Sqdn. 3, (*U. S. S. Raleigh*), Aircraft Sqdns., Sctg. Flt., to Bu. Aero. (June 6)

Tucker, Lt. Albert (C.C.) detached Nav. Air Sta., Pensacola, Fla., to Nav. Air Sta., Hampton Roads, Va. (June 2)

Turney, Ens. William L., detached *U. S. S. West Virginia,* to *U. S. S. Langley.* (June 11)

West, Ens. Marvin J., detached *U. S. S. Niagara,* to temporary duty Nav. Air Sta., Pensacola, Fla. (May 31)

MARINE CORP AIR ORDERS

THE following Marine Corp air orders have been issued as of the dates indicated in brackets:

Adams, 1st Lt. H. F., detached from duty as Quartermaster Observation Sqdn. 9, First Brigade, Haiti, to duty as quartermaster Aircraft Squadrons, E. C. E. F., MB, Quantico, Va. (June 11)

Bartoe, Capt. O. E., detached M. B., Parris Island, S. C., to M. B., N. A. S., Pensacola, Fla. (June 22)

Turner, Lt. Col. T. C., detached Air Corps Tactical School, Langley Field, Hampton, Va., to Headquarters Marine Corps, and ordered to special temporary duty beyond the seas with the Third Brigade, China. (June 11)

SQUADRONS ORDERED TO MARCH FIELD

DUE to the steps being initiated to carry into effect the first increment of the five-year Air Program, embodied in the Air Corps Act approved July 2, 1926, the coming summer will see many changes in station of Air Corps personnel. The establishment of an additional Primary Flying School at March Field, Riverside, Calif., has necessitated a change of scenery for nine squadrons and two photo sections.

The 11th Bombardment Squadron was the first to receive their orders and sailed on May 18th. The following organizations left for March Field about the middle of June; 95th Pursuit Squadron, from Selfridge Field, Mich.; 70th Service Squadron, Kelly Field, Texas; 44th Observation Squadron, Post Field, Fort Sill, Okla.; 23rd Photo Section, Post Field, and the 47th School Squadron from Brooks Field, Texas.

It is expected that the 95th Pursuit Squadron and the 44th Observation Squadron will be made inactive shortly after their arrival at March Field and become the 53rd School Squadron and Headquarters 13th Pursuit Group.

The following-named officers will accompany their organizations to March Field:

2nd Lieut. Wm. G. Plummer, 95th Pursuit Squadron; 1st Lieut. Cornelius J. Kenny, 44th Obs. Squadron; 1st Lieut. Alfred Lindeberg, 11th Bombardment Squadron.

In addition to the officers now at March Field, or under orders to proceed to that station, viz.: Major Millard F. Harmon (who is to be the Commanding Officer), Major Carlyle H. Wash, Lieuts. Earle H. Tonkin, A. C. Kincaid, R. B. Walker and H. B. Chandler, and the officers named above who will accompany their organizations, 21 officers are under orders to proceed to Brooks Field, Texas, reporting to the Commanding Officer thereof not later than June 30th for temporary duty for the purpose of undergoing a special course of instruction for instructors. They will be relieved at such time as will enable them to proceed to March Field, reporting to the Commanding Officer thereof not later than September 15th. Lieut. Byron T. Burt will also attend the instructors' course and then proceed to March Field.

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THE AERONAUTICAL INDUSTRY

CLEVELAND AIR NEWS

By James B. Shaw

THE 112th Observation Squadron, Photo Section and Medical Detachment of 37th Division Ohio National Guard, was mustered in June 20th at Cleveland, Ohio. Seventeen officers and 80 enlisted men now comprise the outfit, this being the minimum strength. Later the unit will contain 33 officers and 157 enlisted men.

Major Thomas J. Herbert, former overseas flyer, is in command. Capt. E. H. Zistel who also served overseas and Capt. Paul Collins, air mail pilot, are next in command. Lieut. Clyde Butler heads the photographic section and Lieut. Herbert Wright has charge of the medical unit.

Through the efforts of the aviation committee of the Chamber of Commerce, this unit was secured for Cleveland. The city of Cleveland donated 100 acres of land adjacent to the municipal airport. The state armory fund is being used to erect hangars and other field equipment, and the Chamber of Commerce has donated $10,000 to complete necessary organization. As soon as federal recognition is given an army instructor and several planes will be sent.

Much credit is due Major Emil Marx, of the State Adjutant General office, O. N. G. at Columbus, for the manner in which he handled the enlisting as several hundred applications swamped him the first day enrollment began. He was assisted by Capt. Roy Burdick, U. S. Army, in mustering in the squadron.

The Cleveland Chapter N. A. A. has appointed Messrs. John Berry, Clifford Gildersleeve, Floyd J. Logan, Herbert C. Smith, Arman L. Marriam, with Major Thomas J. Herbert and Lieut. C. H. Congdon, as the committee in charge of Cleveland control of the National Air Tour, scheduled to arrive at the airport Sunday, July 3rd. The chapter is sponsor for the tour at Cleveland and Floyd J. Logan, who is in charge of the contest committee, is burning the midnight oil to make Cleveland's hospitality the one greatest event of the tour.

LINDBERGH TO MAKE AIR TOUR OF U. S.

COL. CHARLES A. LINDBERGH will make an airplane tour of the United States under the auspices of the Daniel Guggenheim Fund for the Promotion of Aeronautics. He will fly his own airplane the "Spirit of St: Louis", in which he successfully completed his recent New York to Paris flight, starting in about three weeks and covering the entire country. It is expected that the nationwide flight will take two or three months, during which Col. Lindbergh will visit most of the principal cities in the United States. The entire undertaking will be financed and arranged by the Daniel Guggenheim Fund for the Promotion of Aeronautics in cooperation with the Department of Commerce.

"Col. Lindbergh's airplane tour will be undertaken for the primary purpose of stimulating popular interest in the use of air transport. We hope, too, that it will serve two other important ends: first, to encourage the use of our present air transport facilities for mail, express and passenger carrying purposes, aerial photography and other services, and thereby foster the growth of this means of transportation, and, second, to promote the development of airports and air communication services," said Harry F. Guggenheim, president of the Fund.

V. L. BLACK FLYING TO DUTCH EAST INDIES

VAN LEAR BLACK, chairman of the board of directors of the Baltimore *Sun*, left the Schipol airdrome, Amsterdam, Holland at 8:30 a. m. June 15th for the Dutch East Indies. He was accompanied by Pilots Scholte and Geysendorff.

The route they are following is via Budapest, Constantinople, Aleppo, Bagdad, Bandar Abbas, Karachi, Delhi, Ambala, Allahabad, Calcutta, Rangoon, Bankok, Sengora, and thence to Batavia by way of Medan or Singapore.

They arrived at Allahabad on June 24th.

INDIANAPOLIS NEWS

By R. W. Kellum

CENTRAL AIRWAYS, INCORPORATED, has been formed by Indianapolis business men for air passenger service linking the Indiana capital with Chicago, Cincinnati, Cleveland, St. Louis and perhaps other cities. Preliminary plans for participation in the nation's growing aviation enterprises have been completed.

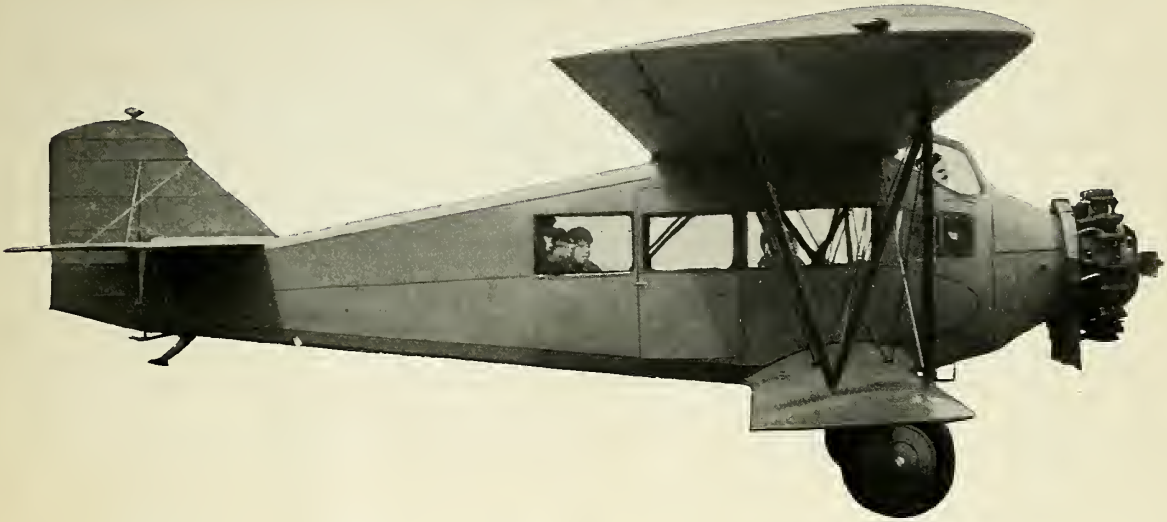
Officers are: president, Norman A. Perry, president of the Indianapolis Power and Light Power Company; vice-president, G. M. Williams, president of the Marmon Motor Car Company; secretary, Paul Richey, president of the Russell M. Seeds Company; treasurer, W. A. Atkins, vice-president of E. C. Atkins and Company. The officers with the following men will form the board of directors: Nicholas H. Noyes, treasurer of Eli Lilly and Company; O. B. Iles, president of the International Machine Tool Company, and Henry L. Dithmer, president of the Polar Ice and Fuel Company.

There will be 1,000 shares of no par value stock. None will be offered to the public. Various models of planes, thoroughly tested, will be bought. Headquarters will be set up at the Cox-Stout airport already under lease by a group of business men who are members of the Chamber of Commerce. The field is being used by the 113th Indiana observation squadron and by several independent flyers about the state.

William H. Kershner, adjutant general of Indiana, has announced commercial planes are now ready for use at the field at any time for business men desiring quick transportation or for light carrying purposes.

Indianapolis extended a cordial greeting to Major Herbert A. Dargue, Pan-American good will flight commander, when he stopped at the city Sunday, June 12, on his tour through thirty-three states of the union. Entertainment was in charge of the Service Club of war veterans with C. Alfred Campbell, the Stutz Motor Car Company, directing the programs.

Speakers at the Aeronautical Chamber of Commerce dinner in honor of Colonel Charles A. Lindbergh.
Left to right: Hon. Wm. P. MacCracken, Jr., Raymond Orteig, Hon. F. Trubee Davison, Col. Lindbergh, Oscar of the Waldorf Hotel, Col. Paul Henderson, Charles M. Schwab and Hon. Edward P. Warner.



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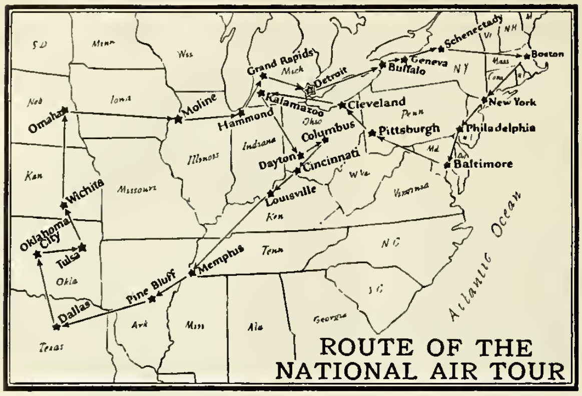
BUHL AIRCRAFT COMPANY

MARYSVILLE, MICHIGAN

THE 1927 NATIONAL AIR TOUR



ROUTE OF THE NATIONAL AIR TOUR

FOURTEEN of the latest commercial airplanes in America are competing this year in the National Air Tour for the Edsel B. Ford reliability trophy and $20,000 in cash prizes.

Twenty-four planes were entered in the tour but only fourteen were on the starting line at the beginning of the tour.

The planes entered represent a wide range in production types.

Starting June 27 from the Ford Airport at Detroit the tour will cover nearly 4,000 miles and twenty-five cities in the Middle West, the East and the South. The tour will end at the starting point on July 12.

The beginning of the flight was witnessed by the greatest assembly of commercial aviation enthusiasts in the history of the event. Prominent among those who are passengers in the competing ships are: W. B. Stout, head of the Stout All-Metal Airplane Company and designer of the Ford-Stout ships; W. B. Mayo, of the Ford Motor Company; William P. MacCracken, Assistant Secretary of Commerce for Aeronautics; Ray Cooper, Michigan Governor of the National Aeronautic Association and manager of the tour; and Captain Ray Collins, prominent Detroit banker and U. S. Army reserve corps pilot, who is official referee of the tour.

C. F. Kettering, chief of the research bureau of General Motors and Edsel B. Ford, president of the Ford Motor Company, were official starters.

The tour this year will constitute a severer test of stamina and reliability than has been imposed in former tours. The element of speed racing has been largely eliminated, but the new rules, weight handicaps and schedules make this tour a real reliability test for ships designed to carry freight or passengers or both.

The entries this year represent distinct advances in design and performance among the foremost types of commercial planes in this country. A decidedly noticeable change is to be seen in the big Ford monoplane which is making the tour carrying eight passengers. Last year's Ford entry was also a three-motored, all-metal monoplane of Stout design, with three 200-horsepower motors. This year's entry carries one 400-horsepower Pratt and Whitney "Wasp" motor at the nose, in addition to two 200-horsepower Wright Whirlwind motors of the same type as those used last year.

Walter Beech, of Travel Air Corporation, who already has won two legs on the Edsel B. Ford Trophy, is not among the competitors this year.

The Whirlwind"-powered Waco-10 flown by Charles W. Meyers.

List of Entries

1. Buhl Aircraft Company; Buhl Air-Sedan; Louis G. Meister, Pilot.
2. Hamilton Metalplane Company; Hamilton Metalplane; Randolph G. Page, Pilot.
3. Alexander Aircraft Company; Eaglerock; Cloyd P. Clevenger, Pilot.
4. Alexander Aircraft Company; Eaglerock; Paul R. Braniff, Pilot.
5. E. P. Hurd, Aeronautical Division; Hurd Monoplane; Rodney S. Lamont, Pilot.
6. Pitcairn Aviation, Inc.; Pitcairn PA-5; James G. Ray, Pilot.
7. Aerial Service Corporation; Mercury MW-3; H. C. Mummert, Pilot.
8. Cleveland Pneumatic Aerol Company; Waco Ten; E. W. Cleveland, Pilot.
9. Advance Aircraft Company; Waco Ten; Richard Pears, Pilot.
10. Advance Aircraft Company; Waco Ten; Douglas H. Davis, Pilot.
11. Advance Aircraft Company; Waco Ten; John P. Wood, Pilot.
12. Advance Aircraft Company; Waco Ten; John Paul Riddle, Pilot.
13. Stinson Aircraft Corporation; Stinson-Detroiter; Leonard Flo, Pilot.
14. Stinson Aircraft Corporation; Stinson-Detroiter.
15. National Airways System; Air-King—1927; Glenn J. Romkey, Pilot.
16. American Eagle Aircraft Corporation; American Eagle—1927; Larry D. Ruch, Pilot.
17. Irwin Aircraft Company; Meteorplane—M-T-2; Jack Irwin, Pilot.
18. Kreider-Reisner Aircraft Co., Inc.; Challenger; A. H. Kreider, Pilot.
19. Curtis-Wright Aero. Synd.; Curtis-Wright Sportster; Carl Milkreit, Pilot.
20. Curtis-Wright-Aero Synd.; Curtis-Wright Air Coach; Chever Cameron, Pilot.
21. Hess Aircraft Co., Inc.; Hess Blue Bird—H-2; Capt. William A. Munn.
22. Ryan Airlines, Inc., Ryan Brougham;

Some of the airplanes in the National Air Tour aft er landing at Curtiss Field, Long Island, New York.

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AIRPLANES
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Frank M. Hawks, Pilot.

23. Ford Motor Company; Ford-Stout All-Metal; Harry Brooks, Pilot.
24. Stinson Aircraft Company; Stinson-Detroiter Monoplane; Edw. Stinson.

Depart Detroit	June 27	10:00 a.m.
Arrive Buffalo	June 27	12:30 p.m.
Depart Buffalo	June 28	10:00 a.m.
Arrive Geneva	June 28	11:00 a.m.
Depart Geneva	June 28	2:00 p.m.
Arrive Schenectady	June 28	3:30 p.m.
Depart Schenectady	June 29	10:00 a.m.
Arrive Boston	June 29	12:00 no'n
Depart Boston	June 30	10:00 a.m.
Arrive New York	June 30	12:30 p.m.
Depart New York	July 1	10:00 a.m.
Arrive Philadelphia	July 1	11:00 a.m.
Depart Philadelphia	July 1	2:00 p.m.
Arrive Baltimore	July 1	3:00 p.m.
Depart Baltimore	July 2	10:00 a.m.
Arrive Pittsburgh	July 2	12:30 p.m.
Depart Pittsburgh	July 3	10:00 a.m.
Arrive Cleveland	July 3	11:30 a.m.
Depart Cleveland	July 4	9:00 a.m.
Arrive Kalamazoo	July 4	10:30 a.m.
Depart Kalamazoo	July 4	2:00 p.m.
Arrive Dayton	July 4	3:30 p.m.
Depart Dayton	July 5	10:00 a.m.
Arrive Columbus	July 5	11:00 a.m.
Depart Columbus	July 5	2:00 p.m.
Arrive Cincinnati	July 5	3:30 p.m.
Depart Cincinnati	July 6	10:00 a.m.
Arrive Louisville	July 6	11:30 a.m.
Depart Louisville	July 7	10:00 a.m.
Arrive Memphis	July 7	1:00 p.m.
Depart Memphis	July 8	9:00 a.m.
Arrive Pine Bluff	July 8	10:30 a.m.
Depart Pine Bluff	July 8	1:00 p.m.
Arrive Dallas	July 8	3:30 p.m.
Depart Dallas	July 9	10:00 a.m.
Arrive Oklahoma City	July 9	11:00 a.m.
Depart Oklahoma City	July 9	2:00 p.m.
Arrive Tulsa	July 9	3:00 p.m.
Depart Tulsa	July 10	9:00 a.m.
Arrive Wichita	July 10	10:15 a.m.
Depart Wichita	July 10	1:00 p.m.
Arrive Omaha	July 10	3:30 p.m.
Depart Omaha	July 11	9:00 a.m.
Arrive Moline	July 11	11:30 a.m.
Depart Moline	July 11	2:00 p.m.
Arrive Hammond	July 11	3:30 p.m.
Depart Hammond	July 12	11:00 a.m.
Arrive Grand Rapids	July 12	11:30 a.m.
Depart Grand Rapids	July 12	3:00 p.m.
Arrive Detroit	July 12	4:30 p.m.

The new Alexander Eaglerock powered with a Wright "Whirlwind" engine.

The following entries did not start: Numbers 5, 11, 14, 15, 16, 17, 18, 19, 20, 21.

The visit of the National Air Tour to New York was underwritten by AERO DIGEST. The flyers and observers were the guests of the New York Committee at a dinner at the Hotel Pennsylvania. Frank A. Tichenor, chairman of the committee, greeted them briefly and read several bulletins announcing Commander Byrd's progress. After the dinner the party were the guests of the Shuberts at the Winter Garden.

The American Oil Company supplied nearly all the planes in the tour at New York, Philadelphia, Baltimore and Pittsburgh with Amoco Gas. The Vacuum Oil Company supplied the oil.

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This work, adopted by the United States Government for use in the instruction of its aviators, is a simple, non-mathematical yet accurate treatise on flying. It is of importance to all interested in the science or art of flying, no matter whether their ultimate viewpoint may be that of the pilot, the mechanic or the aeronautical engineer. Professor Alexander Klemin, of the Daniel Guggenheim School of Aeronautics at New York University, says in his foreword: "It is almost a work of genius in its clarity and vividness. Everything is simple and accurate."

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YPSILANTI AIR RACES

By G. W. Hawkins

THE air meet and speed races held at Ypsilanti, Michigan, June 10, 11 and 12 have passed into aviation history heralded by officials, pilots, mechanics, operators and owners alike as an event far surpassing anything of its kind ever held in the state.

Preliminary to the regular events booked for the three days, were the cross-country speed and distance contests. Arthur J. Davis of Lansing, flying a new Waco-10, placed first in the cross-country speed contest, averaging 120 m.p.h. on his trip to the Ypsilanti field. Talbert Abrams, another Lansing pilot, flying a Swallow, entered by the Davis & Felix Airways of Battle Creek, placed second, averaging 101.4 m.p.h. M. Aavang, Elgin, Ill., also flying a Swallow, took third money, averaging 90 m.p.h. Austin R. (Pat) Narrin, Lansing pilot, flying a Waco-9, *Lansing State Journal* entry, copped fourth, averaging 85.7 m.p.h.

The balance of the entrants as they placed in this event, were: K. A. Hawkinson, flying a Thomas-Morse scout from Gary, Ind., fifth, average speed 75.6 m.p.h.; J. P. Wood, flying a Waco from Big Stone Gap, Va., sixth, average speed 70.5 m.p.h.; W. E. Kysor, flying an Eaglerock from Niles, Mich., seventh place.

Charles W. Meyers, chief test pilot for the Advance Aircraft Co., of Troy, Ohio, flying a Waco-10, won the cross-country distance contest in his trip to Ypsilanti from Kansas City, 601.5 miles. Other entrants who placed in the prize money in this event were: John P. Wood, Waco-9, Big Stone Gap, Va. 352.5 miles second place; M. Aavang Swallow, Elgin, Ill., 238.6 miles, third place; K. A. Hawkinson, Thomas-Morse scout, Gary, Ind., 191.8 miles, fourth place; W. E. Kysor, Eaglerock, Niles, Mich., 140 miles, fifth place; Austin R. Narrin, Waco-9, Talbert Abrams, Swallow, both flying from Battle Creek, Mich., 83 miles, tied for sixth place; Arthur J. Davis, Waco-10, Lansing, seventh place.

The morning of the first day of the official program was taken up in time trials and registration at the field. First and second heats of the speed race, pony express race and dead stick landing contest were run off Friday and Saturday, June 10 and 11th, with parachute jumping and exhibition flying as intermission features.

Edward G. Knapp, state agent for the Ryan and Waco, flying a Waco-9 powered with a Curtiss-6 motor, 165 h.p., copped first place in the speed event, opening the Sunday afternoon program. Flying five laps on a three-mile course, Knapp's time for first place was 8.56. Charles W. Meyers, Waco-10, was second, his time being 10.14 for the 15 miles. Others finishing were Walter G. Carr of Saginaw, Travel Air, time 10.15, third place; Arthur J. Davis, Waco-10, time 10.25, fourth place; John P. Wood, Waco-9; W. E. Kysor, Eaglerock; Talbert Abrams, Swallow; M. Aavang, Swallow.

In the pony express race, which was flown in three laps, landing and exchanging packages with the pilot's judge at the end of each lap, John H. Livingston of Monmouth, Ill., flying a Waco took first prize, flying the course in 11 min. 43 sec. Arthur J. Davis, Waco-10, took second money, his time being 11.49, but six seconds behind first place. E. G. Knapp of Ypsilanti, in his special Waco C-6, took third in 12.06, while Walter G. Carr of Saginaw in his Travel Air took fourth in 12.23. "Bud" Hammond of Owosso in a Waco, and F. Becker, of Jackson, in a Waco, also finished in the money.

Lloyd O. Yost of Pinehurst, N. C., practically a "dark horse" to the other pilots, and who arrived at the airport but a short time previous to the Sunday program, placed first in the dead stick landing contest, maneuvering his ship to within 6 ft. 6 in. of the flag in the center of the field. In this event, the flyer, after reaching an altitude of about 2,000 feet, shuts off his motor at a signal from the ground officials, and glides to earth minus power, landing as close as possible to the flag designating his stopping place. In an interview with the young flyer from the south, the writer learned how Yost places first in this dead stick landing in practically every meet in the country. Yost lives in the mountainous regions in North Carolina where they have only "pocketbook" landing fields, which translated, means a field so small that a ship must be veritably "squashed", or dropped into the field. With such practice as this daily near his home, Yost found it a cinch to drop his ship practically onto the flag for first money.

"Pat" Touhey of Jackson flying a Waco placed second in this event, coming within 16 ft. 4 in. of the flag; John H. Livingston of Monmouth, Ill., in a Waco, third, his distance from the flag being 24 ft. 3 in.; Arthur J. Davis of Lansing in his Waco-10, fourth, with a distance of 26 ft. 6 in.

A banquet was staged at the Washtenaw Country Club Saturday evening by the Michigan Aircrafters' Association, and was featured by short talks by pilots, manufacturers and other celebrities in the science. "Bill" Mara of the Stinson Aircraft Company of Detroit, noted for his "line" in the capacity of toastmaster, ably presided over the banquet.

A pilots' meeting at the Huron Hotel Sunday evening terminated the meet.

Airview of Spokane showing the municipal airport in background at left.

NATIONAL AIR RACES AT SPOKANE, WASH.

THE National Air Races are to be held in Spokane, Wash., on September 23rd and 24th. The Transcontinental Air Derby from New York to Spokane and the Pacific Coast Air Derby from San Francisco to Spokane will begin on September 19.

The Transcontinental Air Derby, which is primarily designed to test the possibilities of commercial airline transportation across the continent, will demonstrate the feasibility of northern transcontinental air routes via Spokane for mail service.

Entries will be restricted to standard stock models that are in production, and the planes must have been inspected and registered under the new regulations of the Department of Commerce, while the pilots must have passed qualifying examinations for the Department of Commerce pilot's license.

Forty thousand dollars in cash prizes and trophies will be awarded in connection with the Air Derbies.

Trophies and cash totaling $15,000 will be awarded for the winners of contests at the National Air Races.

The managing director of the National Air Derby Association is Major John T. Fancher, Commanding Officer of the 41st Division Air Corps; James A. Ford, executive secretary. The executive committee consists of: Walter Evans, president; Victor Dessert, vice president; Harlan L. Peyton, vice president; Charles Hebberd, treasurer; John W. Stewart, secretary; Col. Thomas G. Aston; H. W. Pierong and Leon J. Boyle.

The National Air Races will be held under auspices of the National Aeronautic Association.

Entry blanks, rules and regulations can be obtained from Major Fancher at Spokane, Washington.

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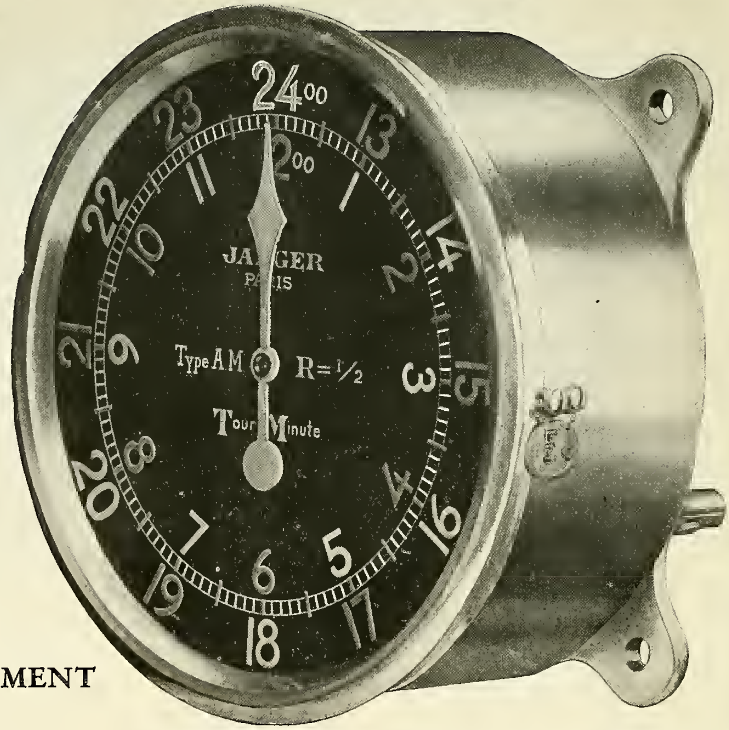

May be used also for motorboats, stationary engines, machine tools, etc. Can be driven from any distance up to 30 feet.

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Built exactly in accordance with Air Service Specifications. Positive lock. Instant release. Made of the finest leather obtainable. Every one rigidly inspected. Tested. Guaranteed.

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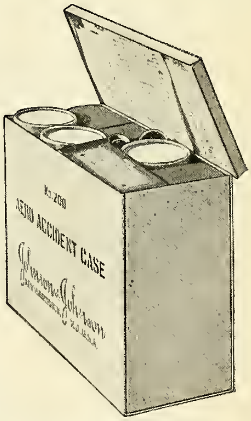


Cy Caldwell, prominent civilian pilot, says, "The Johnson & Johnson Aero Case is the most complete I have ever seen. I heartily recommend it to any flier." Size 6 7-8 in. x 5 1-4 in. x 3 in. Weight 26 oz.

LIGHT and compact—yet complete! Here is the most trim and shipshape accident case you ever saw. Meets every requirement of the Department of Commerce. Answers every first aid need. Contains 16 articles—bandages, iodine, scissors, tourniquet, cotton, aromatic spirits of ammonia, etc. First Aid Chart tells you just what to do and how to do it, even for major injuries. All packed in small white metal box. Takes up little space.

Yet this Aero Accident Case was assembled at the lowest possible cost to you—$4.25. Mail your check with the coupon. The postman will bring your accident case direct.

Johnson & Johnson

Johnson & Johnson, Inc.
New Brunswick, N. J.
Gentlemen:
Please send me your Aero Accident Case. I enclose $4.25.

Name...

Address...

City...................................State............A

Representatives of aircraft manufacturers and operators and of the National Advisory Committee for Aeronautics attending the second general conference held at Langley Field, Virginia, May 24th.

DETROIT AIR NEWS

By Frank Bogart

WILLIAM B. MAYO'S announcement, on behalf of the Ford Motor Company, that the airplane division is preparing to bring out "in the very near future," a machine of twice the passenger-carrying capacity possessed by the present all-metal, Stout-designed, transport monoplane, was the outstanding development of June in the Detroit field.

Mr. Mayo sounded a note of complete confidence in the ultimate success of commercial aviation in the United States, which is being re-echoed by business leaders in many fields everywhere, at the meeting held on June 16 to acquaint Colonel H. H. Blee, business specialist of the Department of Commerce, with what Detroit wants from the federal government in the way of extended air mail facilities.

Ford may in time undertake to build a 100-passenger ship, Mr. Mayo indicated, but this will not be until after a number of intervening stages have been successfully passed. Larger planes must be built in this country if air transport is to be made profitable for operators, he said, in order that the individual cost per trip per passenger may be made as low as possible. The present Ford tri-motor machine has seats for only eight passengers on a trip of any length, although it has taken the air with as many as 16 persons on board, including a crew of two men. The cabins of the new and larger machine will seat from 16 to 20.

The Ford all-metal, single-motor monoplane, with cabin for five, is in the test flight stage with every indication that it will prove up and go into immediate production. It will sell for around $10,000. The present three-motor machines, at $40,000, are coming through the factory at the rate of about one each ten days. The next ones out will probably be used in passenger service by the Stout Air Services, Inc., which plans to operate from Detroit to Cleveland, starting about the middle of July. It is also possible that one or more planes will be sent to Los Angeles this summer, as business men from that city and San Francisco are in negotiation with the Ford Company to open a passenger line between those points.

Ford-built planes are now flying on four lines out of the airport at Dearborn, covering 2,000 miles daily, and the freight planes operated by Ford privately to Cleveland, Chicago and Buffalo are carrying a total of six tons of freight a day, Mr. Mayo said. The fourth line is the passenger service operated by the Stout Air Services, Inc., to Grand Rapids, 142 miles distant, on which about 2,000 persons have been carried in the 10 months it has been open. A sight-seeing service, 20 minute hops for five dollars, has been in effect at both Detroit and Grand Rapids since June 1, and in the first 15 days 965 persons had been carried. These short trips give many persons their first flights and at Dearborn the trip is accompanied by the privilege of inspecting the aircraft shops, hangars, and the airship mooring tower.

The Wayco Air Service, Inc., formed by the owners of a Detroit oil firm who were among the first business men to purchase an airplane, now has a fleet of three Stinson-Detroiters and has been doing regular "taxi" work to all parts of the country since May 1. A total of 17,000 miles had been flown in the first six weeks, with 257 persons carried.

Twelve pilots of the Ford Motor Company, four of the Stout Air Services, Inc., and nine others, including several amateurs, have passed the federal pilots' examinations. Inspectors are still receiving applications and licensing aircraft through Michigan, Ohio and Indiana. The Michigan state law requiring pilots and craft to be licensed does not go into effect until September.

BOSTON AIRPORT NEWS

By G. W. Hamblin, Jr.

COL. LINDBERGH'S flight to Paris has stirred up interest in flying here in Boston like no other feat has done before. The airport has been crowded on Saturdays and Sundays, necessitating the erection of a fence to keep automobiles off the field. The next step is to get a policeman to keep the spectators from walking into a prop. And if "Slim" ever comes to Boston—WOOF! We'll make Washington and New York look like a Sunday School Picnic.

Lieut. "Jimmie" Doolittle breezed in in a P-1 pursuit ship, to perform for the customers of the third annual boxing carnival of the Crosscup-Pishon Post, American Legion, at Braves Field. He was billed in the gnuspapers (with apologies to Cy Caldwell) as the "World's Champion Stunt Flyer", and from what I could see of his work that night, he certainly deserves the title.

Oh, yes, yes, speaking of the gnuspapers, I read where Lindbergh, on taking off from Washington, "threw the stick into high, and a moment later was in the air." Ray! We have gear-shift airplanes in this country now!

Major Herbert A. Dargue, who once was C. O. here at the port, and who headed the Good-Will Flight, made a tour of New England, staying at the port most of the day. Everyone was glad to greet the Major again.

Fred Perierra of Lynn, Mass., has gone to Kansas City to buy an American Eagle, to use for passenger-carrying at the Lynnway Flying Field, on the Lynn-Boston main highway, which will be his headquarters. A flying school will also be operated with Lieut. Adolph Backstrom as one of the pilots.

The Boston Airport Corp. has, of course, led the list with actual flying done at the port. The Stinson-Detroiter has been to New York so much it has worn a lane in the air between here and the Big Town. Billings flew pictures of the Lindbergh reception up from Washington taking 3 hours and 35 minutes for the hop. On this same news event, the Curtiss Flying Service sent an Oriole up, with Pickenpack at the controls.

Ten new students have been signed up for the airport flying school, bringing the total up to sixty-odd. A new Travel Air, 160 horse Hisso, is on the way for the Boston Airport Corp., and several other ships are on order.

Ralph "Wick" Wickford, employed by the Airport Corp., turned in a beautiful piece of flying early in the month by setting his ship down with the left side of the undercarriage broken. "Wick" held her over on the right wheel until his speed was "eight miles, or less," as "Wick" puts it, and then she gently laid over on the wing tip, so gently, in fact, that the fabric was not broken on the left wing-tip. Wickford is rapidly becoming one of the finest flyers on the field.

Fred Ames flew his Whirlwind Travel Air to Wichita to be overhauled, making the trip in 2 days. The ship has served Fred for a year, and he decided to have it completely gone over. He expects to have it back in a couple of weeks.

Another new flying field will be opened at Atlantic, Mass., about thirty minutes from Boston. This field is situated on the road to Squantum, Quincy, and the South Shore. It is being built, and will be run by Al Dennison, recently of M. I. T. The airport will be opened officially July 1.

ROBERTSON PURCHASES CURTISS OX5 MOTORS

THE Robertson Aircraft Corporation recently purchased the entire stock of OX5 motors (1,150 OX5 motors) and parts from the Curtiss Aeroplane and Motor Co. This is believed to be the largest single purchase of OX5 motors on record in commercial aviation. The Robertson Company intends to dispose of these motors within the next three years.

GUGGENHEIM SCHOOL AT N. Y. U. IS OPENED

THE new building of the Daniel Guggenheim School of Aeronautics at New York University, University Heights, was formally opened on June 4th when Daniel Guggenheim, founder, presented it to Chancellor Elmer Ellsworth Brown who accepted it on behalf of the university.

Assistant Secretary MacCracken speaking of the "bountiful generosity and inspired vision of Daniel Guggenheim" asserted that "within the walls of this building scientists will unravel still further the age-old mystery of flight. Each and all of us will benefit by these discoveries, made possible by Mr. Guggenheim's endowment."

Dean Bliss read a telegram from Orville Wright, Chairman of the Advisory Committee of the School of Aeronautics, which read: "Regret I cannot be present at the opening of the new building and the inspection of the laboratories of the Daniel Guggenheim School of Aeronautics. Please express to Mr. Guggenheim my personal thanks for what he has done for aviation."

Mr. Guggenheim asserted that the future of aviation was in the hands of the country's youth, and cited Lindbergh as an illustration of what aviation holds for the ambitious youth.

It was through his son, Harry, an aviator in France in the World War, that he became interested in aviation and particularly in the foundation of the Daniel Guggenheim School of Aeronautics.

Satisfaction with the progress of the school was expressed by the founder who said he had been informed that the enrollment was almost twice that of any other engineering department of the university, and that he was gratified that the trustees of the fund had made grants to the Massachusetts Institute of Technology, University of Michigan, Leland Stanford Junior University and California Institute of Technology to create aeronautical instruction centers.

FITZPATRICK VICE-PRES. OF HASKELITE

JAMES R. FITZPATRICK has been made vice-president of the Haskelite Manufacturing Corporation. Mr. Fitzpatrick continues as secretary and member of the board of directors, and is also in charge of sales.

Briefly, he has been with the Haskelite Corporation since a few months following its organization in 1917, and has served it in all capacities from factory manager to purchasing agent and sales manager and also as an executive.

Mr. Fitzpatrick is active in trade associations in the electric railway field. He is a member of the American Society of Civil Engineers and the Society of Automotive Engineers; is a graduate of the Rensselaer Polytechnic Institute of Troy, New York, with a degree of Civil Engineer and some time ago was elected trustee of this institution.

CONG. JAMES ON INSPECTION TRIP

REPRESENTATIVE James of Hancock, Mich., of the House Committee on Military Affairs and acting chairman during most of the last session of Congress, will inspect practically all the military posts of continental United States, Hawaii and the Panama Canal Zone for the primary purpose of determining the housing needs of the Army.

"We have authorized in Congress, during the last two sessions of the 69th Congress," he said, "more than $20,000,000 for the program of properly housing the military forces of the Nation. This sum has been, and is, available during the fiscal years ending June in the years 1927, 1928, 1929.

"This amount was authorized and part of it has been appropriated. We shall be confronted with the problem of what, and how much, to appropriate for at the coming sessions of the new 70th Congress, and for that purpose I purpose to visit, beginning at once, practically every military post."

A CORRECTION

IN the advertisement of the Advance Aircraft Company, June AERO DIGEST, it was stated that a WACO-10 was built to stand up under a power range of from 90 to 150 horsepower. The advertisement should have read from 90 to 250 h.p.

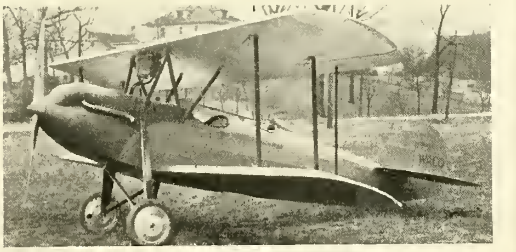
Comm. Byrd's North Pole Flight Plane Was Equipped with Belden Shielded Wire

BELDEN wire, shielded for radio, was used on all low tension circuits of the "Josephine Ford" Fokker 3-engine Monoplane which carried Commander Byrd in his flight over the North Pole. The constant use of Belden Airplane wire and cable on aircraft undergoing the most strenuous tests is significant evidence of its quality. Write for complete information about Belden Airplane Wire and Cable.

Belden Manufacturing Co. 2304-B S. Western Av. Chicago, Illinois

Specify **Belden**

Consult Belden Airplane Engineers regarding specially designed airplane harness—either shielded or unshielded—or other wiring problems.


$2385. F. O. B. Factory

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FLYING INSTRUCTION

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Immediate delivery on new ships, Service and Parts

VALSPAR ON TRANS-ATLANTIC PLANES

ONE interesting fact in connection with the Lindbergh and Chamberlin transatlantic flights is the manner in which their planes were protected from the elements. Outside of aviation circles, it is not ordinarily realized how important a part the finish plays in the flying efficiency of a plane. If the fabric is not thoroughly protected from the effects of rain, sun, sleet and snow, it soon loses its tautness and the plane's safety is endangered.

We find upon inquiry that Lindbergh's Ryan monoplane, Chamberlin's Bellanca monoplane and Byrd's trimotored plane are protected with Valspar finishes manufactured by Valentine and Company.

Advice from the Ryan Airlines, Inc., is to the effect that all metal parts of Lindbergh's plane are coated with Nitro-Valspar, the same all-lacquer finish which is used extensively by many automobile manufacturers in finishing their cars, while all wood parts of the plane have been treated with clear Valspar varnish.

In the case of the Bellanca plane which Chamberlin flew from New York to Berlin, all exterior surfaces are Valsparred. The fuselage of this machine was coated with aluminum Valspar-Enamel while the doped wing surfaces and propeller were given coats of clear Valspar varnish,—a practice followed extensively by the Army and Navy as well as by many private concerns which build and operate aircraft.

It is worthy of note, also, that the trimotored plane in which Commander Byrd made his flight to Europe, has its aluminum-colored fuselage coated with Valspar, while its wing surfaces, which are made from plywood, are protected by clear Valspar.

A review of aircraft statistics shows that Valspar has been used on nearly all record-breaking American aircraft since the earliest days of aviation, and to-day is very widely used for aircraft work, where absolute dependability is a prime requisite. Of course, a finish of exceptional durability is essential in aircraft work, in order to stand the rigors of weather, temperature changes and vibration.

Chamberlin's Bellanca plane, when seen in its hangar shortly before its recent record flight to Germany, had already flown some 25,000 miles including the record endurance flight of over 51 hours made in April of this year—and was in perfect condition.

AMOCO-GAS USED FOR THE "COLUMBIA"

CLARENCE D. CHAMBERLIN and Charles A. Levine, in their transatlantic flight which established a new long distance record, used a product whose name has a familiar sound to aviators and motorists. When the Bellanca monoplane left New York on its record-breaking trip—451 gallons of Amoco-Gas (Aviation Grade) were stowed in the tanks.

The successful completion of the Pan-American Good Will Flight made by the squadron of United States Army amphibian airplanes under the command of Major H. A. Dargue, first brought the merits of Amoco-Gas prominently before aviation experts. In this 20,000 mile trip through Latin America, Amoco-Gas and Amoco Motor Oil were used exclusively. The necessary arrangements for insuring a sufficient supply of Amoco products at widespread and sometimes remote stopping places throughout South America, were made in advance by the American Oil Company and on his return Major Dargue said that the big drums painted in the familiar green came to be the most welcome sight at each landing place on the route.

BERRYLOID ON THE "SPIRIT OF ST. LOUIS"

IN a recent general letter sent out by E. G. Richard, Southern California representative of Berry Brothers, Inc., manufacturers of varnishes, enamels, lacquers, etc., he says that Berryloid was used to finish the outside of the fuselage of Colonel Lindbergh's famous plane.

Berry Brothers have been unusually successful distributing their products in the aircraft field during the past few years.

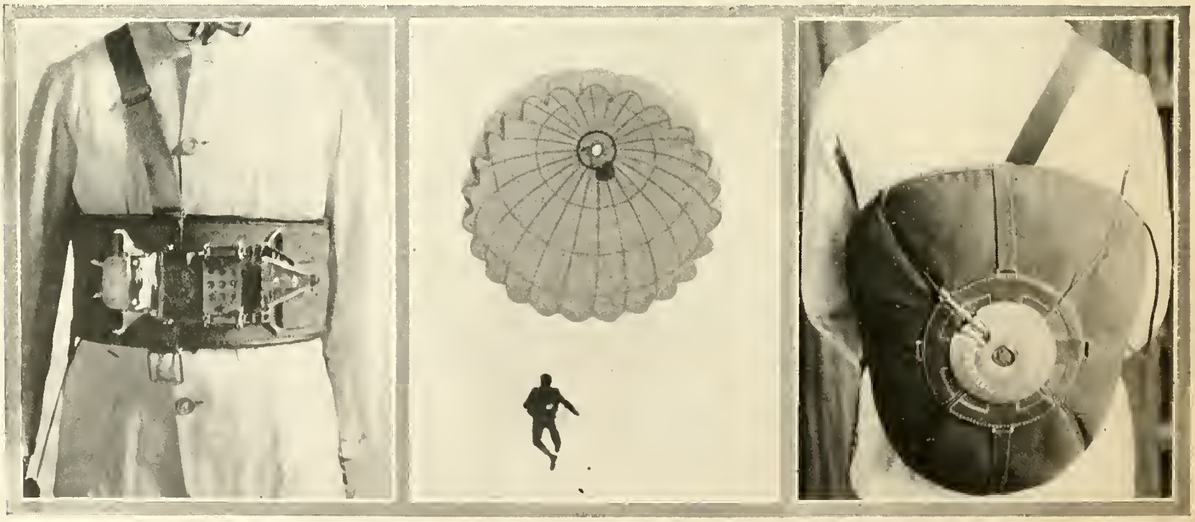
Another well known airplane on which their product Lionoil was used was the Yackey Transport "The Ern" which was flown by Richard K. Peck for the Stirling Dutch New Guinea Expedition under extremely difficult tropical climatic conditions. "The Ern" was of metal construction and required complete protection against corrosion induced by sea water and temperature changes.

SALVATOR PARACHUTE

AT the aviation field of Montecello, Italy, successful tests were made on April 30th, of the "Salvator" Air Service parachute, invented by Messrs. Freri and Furmanik. The Italian Ace Arthur Ferrarin made a descent from a height of 500 meters, touching the ground gently. Ferrarin is the famous pilot who flew from Rome to Tokio. He hopes to wear this chute in the next Schneider Cup Race. The chute weighs only 6,400 kg. and it is carried in a neat pack on the wearer's back in such a way that his movements are not hampered to any extent.

After making the first delayed opening test of the chute Ferrarin described his sensations. He said: "When I jumped from the cockpit there was a painful sensation of uncertainty which soon passed, for the rapid descent is soon checked by the opening of the chute. I did not seem to feel the jerk of the chute which opens easily and smoothly. I could not help being amused as I realized I had instinctively clutched at the air just as I would have reached out had I fallen into water—hands first so as not to touch bottom. One soon becomes accustomed to the idea of jumping with a parachute and it becomes a commonplace act. When touching the ground the impact is about equal to that resulting from a free jump from a height of two meters. The usual rate of descent is about 20 km. per hour."

At the first International air meeting Ferrarin and his associates plan to participate in a series of demonstration jumps with the Salvator parachutes which have merited their complete confidence.



The Italian "Salvator" parachute, used with success by the Italian Air Service.

ASPA ACTIVITIES

WITH the slogan of "One Million Members by 1928" the American Society for Promotion of Aviation has started a nationwide membership drive.

Under the auspices of the A. S. P. A. flying clubs have been organized in Yonkers, New Rochelle, Mount Vernon and Forest Hills, N. Y.; Dorchester, Mass.; and Bend, Ore.

WOOD CONVERSION CO. ENLARGING PLANT

THE Wood Conversion Company have begun construction of a new Balsam-Wool factory adjacent to the present plant on Arch Street, Cloquet, Minnesota. The present unit has operated night and day continuously during the last three years. On December 1, 1926, the installation of additional machinery was completed and the output was doubled. Since that time the demand for this product has grown so rapidly that production is not adequate to fill orders.

The new factory will produce 600,000 square feet of Balsam-Wool in 20 hours.

GOODYEAR WINS AIRSHIP DESIGN AWARD

FIRST prize in the Navy's design competition for a new airship of 6,500,000 cubic feet gas capacity was awarded to the Goodyear Tire and Rubber Company. A prize of $50,000 is carried with the award.

A second award of $5,000 was approved for the purchase of the design submitted by W. Watterson Pagon of Baltimore, while the design of Dr. Johanes Schwengler of Stretlitz, Germany, received honorable mention.

The new airship will cost about $5,000,000 and take about three years to complete.

The Pitcairn "Mailwing" with the Wright "Whirlwind" engine, competing in the National Air Tour.

AIR MAIL BIDS ASKED

PROPOSALS have been invited for the transportation of air mail under contract on the following routes:

Albony, via Schenectady, Syracuse, Rochester ond Buffalo, N. Y., to Cleveland, Ohio, and return. Distance each way approximately 452 miles. The Department will permit the successful bidder to commence service over such porion of this route as may be found advantageous from a traffic standpoint without requiring service over the whole route at the start.

Cleveland, via Akron, Columbus, Doyton ond Cincinnoti, Ohio, to Louisville, Kentucky, ond return. Distance each way approximately 339 miles. This route is being re-advertised at the urgent request of prospective patrons.

Dallas, via Houston to Golveston, Texos, and return. Distance each way approximately 283 miles.

Dallas, via Woco, Austin and Son Antonio, to Laredo, Texos, ond return. Distance each way approximately 417 miles. The route is advertised from Dallas to Laredo, but service will not be extended to Laredo during the life of this contract until after service from Dallas to San Antonio is established.

The above routes are open to bidders regardless of residence, and bids will be received at the Post Office Department in Washington until 12 o'clock noon, July 16.

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Complete warehouse stock available for immediate shipment in any quantity.
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DALRYMPLE PRES. OF ATLANTIC AIRWAYS

THE formation recently of the Atlantic Airways, Inc., to take over the distribution of the Alexander Eaglerock for eastern states marks the entry of another new company in the eastern aircraft field.

F. W. Dalrymple is president of the new company, which will have its headquarters at a new flying field, Eaglerock Airport, New Rochelle, N. Y. This field is conveniently located near the Boston and Westchester R. R. which maintains quick service into New York City.

Other members of the new company are: Willard Haviland, F. K. Nixon, Henry M. Lester, Harold Helpern, Francis Murphy, and Walter Hinton, well known transatlantic flyer.

A flying school will be operated in conjunction with the new airport.

COTTON FABRIC ON TRANSATLANTIC PLANES

COLONEL LINDBERGH'S *Spirit of St. Louis* was covered almost completely with American-made cotton fabric. More than 125 yards were used in covering the wings, fuselage and tail surfaces. Another 400 yards of tape cut from the same cotton fabric were used in covering seams over struts and framework.

Cotton airplane fabric, now being increasingly and successfully used by American aeronautical engineers, is made of fine cotton yarns which have been spun from long staple cotton. The cloth is subjected to rigorous tests throughout the process of manufacture so that it combines unusual strength with light weight. These tests make it possible for a plane to ride out such strains as Colonel Lindbergh encountered in driving through a heavy sleet storm for 1,000 miles on his successful flight. The plane after being examined by Colonel Lindbergh at the Le Bourget airport was in the same condition as when it left America with the exception of the few strips of fabric removed by souvenir hunters.

Cotton fabric was used in the construction of the Bellanca *Columbia*. Commander Byrd's *America* also uses cotton fabric.

ARTHUR GETS NEW AIRPORT CONTRACTS

CONTRACTS for airports at Portland, Maine, and Elmira, New York, have been recently obtained by William E. Arthur Company, New York, builders of airports and flying fields.

At Portland, Maine, the airport is planned to accommodate the equipment for extensive airline operations—a line from Portland to the Maine Lakes and Portland to Boston are two of the routes under advisement at the present time.

A group of prominent Elmira citizens have formed a company to build and operate an airport at that city from which "feeder" lines will be run to Rochester and other nearby cities. The field is 183 acres in area.

MATERIALS

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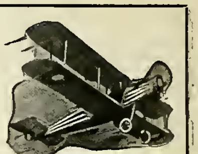

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AMERICAN LEGION AIR MEET AT CURTISS FIELD

THE main feature of the American Legion Air Meet held at Curtiss Field on June 12th was the stunt flying of Lieut. James R. Doolittle, Army Air Corps, who thrilled the 10,000 persons attending the meet. A short time ago Lieut. Doolittle made an "outside loop" for the first time in the history of aviation.

William Parker in a Whirlwind motored Travel Air won first place in the open race; George Weiss, Whirlwind Travel Air, second; Richard Pears, Fairchild monoplane, third.

In the OX-5 race, for planes of 90 h.p. engines, Russell Schults flew an Eaglerock to first place. Second place went to Russell Holderman in a JN with Sikorsky wings.

Lieut. Kendrick Noble won the National Guard race. Parachute jumps were made by Jean Brundige and Arthur Bergo.

A squadron of six Curtiss army pursuit planes, commanded by Major Thomas Lanphier, did military formation and stunt flying for the crowd.

HUDSON STRAITS AIR SURVEY

By E. Chicanot

EARLY in July the Royal Canadian Air Force will set out upon one of the most difficult and arduous expeditions which has fallen to its lot when the detachment to undertake the Hudson Straits air survey leaves for the Canadian Artic. Parliament at the last session approved a vote of $800,000 for the work in connection with the proposal to develop an ocean port on Hudson Bay but unofficial estimates put the total cost at nearer a million dollars. The expedition will leave from Halifax and be away from civilization for fifteen months.

The expedition, which will comprise altogether nearly fifty officers and men, will be in charge of N. B. McLean of the Department of Marine and Fisheries, while Flight Lieut. T. A. Lawrence will be officer in charge of air operations with a personnel of seven officers and sixteen other ranks.

The purpose of the expedition is to observe ice and fog conditions in order to get definite information on how long the straits would be navigable. The air force reports will be made to the Government and upon the results of its findings will depend much of the future possibilities of the Hudson Bay Railway as far as having an ocean outlet on the Bay is concerned. Powerful wireless equipment is to be taken north and it is expected that the expedition will be in almost daily communication with the Air Force headquarters at Ottawa.

WOMAN'S FLYING CLUB

THE wives of a number of members of the Chicago Flying Club recently organized the Chicago Flying Club Auxiliary for the purpose of giving women the opportunity of learning aviation.

Many members of the Auxiliary are taking flying instruction. Charter members of the club are: Mrs. E. Lewis Campbell, wife of the president of the Chicago Flying Club, Mrs. E. L. Skocdopole, Mrs. A. L. Tourville and Mrs. Edward Gorney. Any woman interested in aviation is qualified for membership. The initiation charge is $10 for those wishing to take flying instruction and $5 for those who do not. The dues are $1 per month and the charge for each 20-minute flying lesson is $3.50, or $10.50 an hour. The Chicago Flying Club field, planes and pilots are at the disposal of the members of the Auxiliary.

BUFFALO HOTEL ROOF MARKED FOR AIRMEN

IN order to assist the flyers coming to Buffalo, who are not acquainted with the location of Buffalo's Airport, the Hotel Statler in that city has marked its roof. This marking can be seen for several miles in the day time and has already proven a great aid to strangers in the locality. Incidentally, the arrow pointing toward the Airport parallels a street which runs straight out past the field and gives the flyer a double check on his location, should visibility conditions be bad.

BALTIMORE AIR MEET

THE seventh annual exhibition of aircraft was held by the Flying Club of Baltimore and the Air Corps, Maryland National Guard, commanded by Major William D. Tipton, at Logan Field, Baltimore on May 30.

The crowd was the largest ever to attend the Baltimore meets. The first race was that of the Maryland National Guard, won by Lt. John A. Battle, N. Y. N. G.

Tech. Sergt. Stuart G. Dietz, Md. N. G., was the victor in the parachute jumping.

In the pursuit race for fighting planes, Lt. Stephen McClellan, Marine Corps, maintained a speed of 192 miles an hour for a distance of 52 miles.

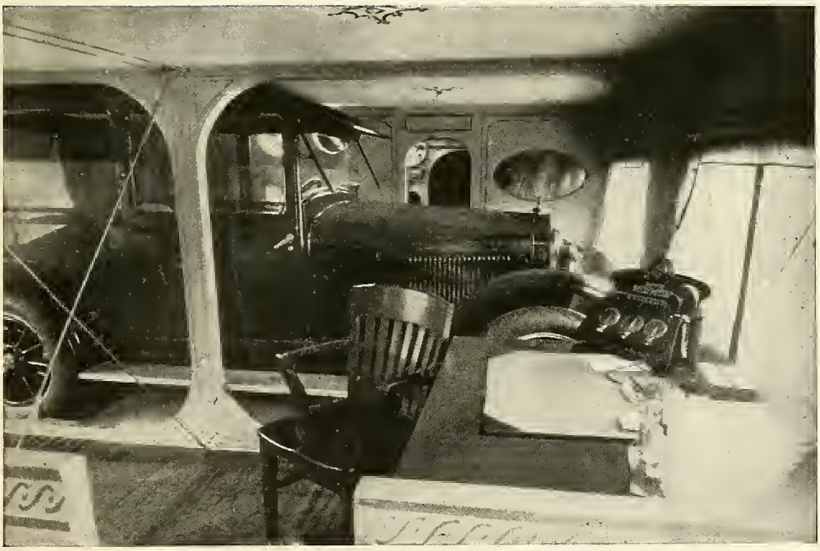
In the stunts event, Lt. Sanderson received first place.

The last race, a relay, was won by the Navy team.

On the winning team Lt. Carl Sachs, Quantico, piloted the training plane; Lt. S. W. Litch, the observation, and Lt. William G. Tomlinson, the fighting plane.

The judges of the events were: Commodore F. G. Erickson, chief judge; Major Paul V. Burwell and Major John C. McDonnell.

The officers of the Flying Club of Baltimore are: W. Frank Roberts, chairman of the board; George C. Smith, president; Gen. Henry M. Warfield, vice-president; H. B. Potter, vice-president; Gen. Milton A. Reckford, vice-president; Sifford Pearre, vice-president; Lewis R. Lemke, treasurer; William D. Tipton, secretary.



Interior view of RB2 Transport plane as flown with Essex Coach, office equipment and eight men

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THE BURNELLI TYPE OFFERS UNEXCELLED POSSIBILITIES OF
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REMINGTON AIRCRAFT CORP. BURNELLI

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HARTFORD,
CONNECTICUT

Picked from the Air

AERO DIGEST will award a prize of $5 each month for the best humorous contribution published. Only those pertaining to the aircraft field will be considered. Address the "Picked From The Air" Department, Aero Digest, 220 West 42nd Street, New York, N. Y.

Lewis S. Grenz, Wenatchee, Washington, won the prize for July.

A colored man on trial for assault and battery upon his wife was asked by the judge to explain:

"Jedge, Ah comes home fo' mah suppah an' Ah finds mah wife all dressed up in a flyin' suit. 'Mirandy,' Ah says, 'Where is mah vittles?' 'Go on, don' bodder me, niggah,' she says, 'Ah's a aviator now. Ah belongs to de Quiet Birdmen for cullud women.'

"Jedge, Ah jes picked dat woman right up, tossed her out de window, an' said, 'If you is a Quiet Birdman den here's you chance to shut you mouf and fly!'"

Psychopathic Notes

(Early last evening Patrolman Monahan, of the East Thirty-fifth Street Station, was walking his beat quietly, when he heard a crash a few feet away. Turning quickly, he saw a man lying on the sidewalk, a queer contraption attached to him. The policeman ran to the man and found that he had jumped from a second-story window. He wore heavy goggles; crude canvas wings were strapped to his arms, and an ordinary outboard motor, such as is used on a canoe, was securely fastened to the seat of his trousers. Further examination revealed that the man was young, and that he carried one-half of a peanut butter sandwich in his waistcoat pocket, a flask of water slung about his neck and a small compass in his side pocket. Monahan questioned the young man for a few minutes and then took him to Bellevue, where he is now under observation. Below is a stenographic report of his remarks on his arrival in the hospital.)

Don't let 'em stop me! Can't stop. Can't possibly stop. Non-stop. Non-stop, New York to Rome. Never no more to roam. But mustn't stop. Keep on. And on and on. On the front page. Pictures and everything. Son of two flies ocean. Clean-cut American youth. Clean-cut. And bruised.

But not at all tired. I could have kept on to Cairo. I could have made Cairo easily. But I'm out of practice. Chiropractice. Not in the least tired. Not hungry. I had a sandwich with me. A sandwich to an international institution. Three thousand pounds of sandwiches. A cup of coffee, a sandwich and flew. I beg pardon.

Thank you, no. Nothing to eat. Beer, however. Oh, yes. Beer. Because I'm non-stopping to Rome. Must do as the Romans do. Hence the beer. Beer in mind. Just one keg for the present. As a present. Shower me with presents. And futures. Futures in the movies and vaudeville. And indorsing yeast. Yeast by nor' a half east. That was my course.

But I can't accept the million dollars. It's too much. I can't take a cent more than seven hundred and fifty thousand. For the first week anyway. Not till I swim the Channel. Or fly to Japan. Then it'll be different. I'll learn to sing. I'll fly to Honolulu and learn the uke. And then I'll take a thousand weeks in vaudeville. At two hundred bucks an hour. Cheap at twice it. Two hundred an hour.

And it took forty-two hours, six minutes and twenty-one and a fifth seconds. New York time. Daylight saving. Or if you figure Greenwich mean time—but that would be mean. Wouldn't it? So I flew from New York to Rome in sixty-three hours flat. German time. Which breaks all records. Except the phonograph records.

Nice royalties on the records. How I flew to Athens in fifty-five hours and a few minutes. Non-stop. Non-stop me if you've heard it.

I write for the papers. Kind of.

Kings who have kissed me. I don't mind. They kissed Lindbergh. And Chamberlin. Good heavens! Do you suppose they kissed Levine? Why not? So I let 'em kiss me. Say I'm weary, say I'm sad, say that health and wealth have missed me. You know. Remember? Say I'm growing old, but add, Mussolini kissed me. That's how it is. You may kiss me, if you like. Kiss and make up.

Kiss and make up a story for the papers. Nice story about cheering crowds and everlasting fame. Permanent fame. Like a permanent wave. Last through four haircuts.

I could have gone on to Bombay. I ran out of fuel. The flyin' fuel. That's what they call my gasoline. Six thousand pounds of gasoline. For four thousand eight hundred and sixty-two miles. Eastern Standard Time. Or thirty-eight hundred wholesale. That's rock-bottom. I can't accept less. Ten thousand a week and beer. That includes fuel and light. Fuel and light wines. You darn fuel!

Do I get a battleship? I want to go home in a battleship. To fight off the crowds. Too many crowds. Too many medals. Many a medal makes a muddle. Mud'll be the death of me yet. Mud. And fog. And mist. Nothing but mist, mist, mist. Missed my calling. Should have been an orator, a speaker. A loud-speaker. But missed my vocation. In the mist.

No, no. Not a bit tired. Didn't get a wink of sleep, but that's all right. What's sleep between continents? Nothing. Not sleep. Sleet. That's something else again. Oh, sleet it is a blessed thing, beloved from —the Hell it is. Sleet and low, sleet and low, wind of the Western Sea. See.

Sea. That's what this world needs more and bigger of. Now that I've non-stopped to Rome, I'll fly to Cape Horn. Blow your own. Quick before somebody flies to Constantinople.

The whole trick is the earth inductor compass. It induces the earth. And you can't do much unless you induce the earth first. You know how that is. Lines of force, you understand. Lines of police force. To keep the crowd back. The crowd of people with checks. Checks, checks, checks.

They're very cordial the Czechs. They swarmed across the field. The magnetic field. Thousands of Czechs. Czechs for millions of dollars. But I can't take your money. I'll take your yeast instead. You indorse your check and I'll indorse your yeast. Fair enough, eh?

Well, I must be off now . . . off for Moscow. . . . Way, way off . . . Off in the stilly night . . . Don't be stilly. . . . I'm off . . . you . . . Off you for life, if you stop me . . . because I'm non-stop. . . . Hey-nonny, nonny!

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The chief reason why AERO DIGEST carries the greatest volume of aeronautical advertising per issue is because advertisers are getting results.

Here is what J. A. McInaney, *of the* Alexander Aircraft Company, *says:*

"It is our pleasure to state that AERO DIGEST has never disappointed us in returns. During a four month period there was an *average* of 146 replies at the Denver office. As the advertising usually directs the inquirer to *either* the Denver office or his nearest dealer, undoubtedly the 146 reply average is a small percentage of the total received by our 27 dealers throughout the country."

(Signed) J. A. McInaney,
Sales Manager.

Mr. L. A. Shoumatoff, *of the* Sikorsky Manufacturing Corporation, *writes:*

"We are glad to inform you that in response to the half page advertisement we ran in the April issue of AERO DIGEST on our UN-4 Monoplane, we received over three hundred and fifty replies, some of which have resulted in actual sales.

We believe this to be an excellent response to our advertisement and thought that you would like to know about it."

(Signed) L. A. Shoumatoff,
Secretary-Treasurer.

If you manufacture airplanes or if you produce the materials that airplanes are made of you can be certain that every prospective customer will read your advertisement if it appears in AERO DIGEST.

Our June 30 sworn statement will show a total *paid circulation* of over twenty-five thousand!

AERO DIGEST

THE MAGAZINE OF THE AIR

220 West 42nd Street · New York, N. Y.

FOREIGN AERONAUTICAL NEWS IN BRIEF

Compiled from the foreign aeronautical press, the Automotive Division and the Transportation Division, Bureau of Foreign and Domestic Commerce

Supermarine amphibian flying boat with Napier "Lion" engine.

FRANCE

TWO Frenchmen are planning transoceanic hops. Maurice Drouhin is expected to take-off soon from Paris to New York in a Farman Goliath biplane carrying 10,000 litres of fuel.

Sub.-Lieut. Paul Tarascon also plans a Paris-New York flight. His plane has been designed by M. Hubert and is being built by the S. I. M. B. company at LeBourget. It will have a 420 h.p. air-cooled engine. He will carry Lieut. Leprieur as navigator.

A WRECKED plane, found near the Amazon River mouth, is reported to be the Farman bimotored (Lorraine) plane in which the missing French airmen, Capt. St. Roman and M. Mouneyres, set out from St. Louis, Senegal, on May 5, for Pernambuco, Brazil, and since disappeared. The markings on the tires of the wrecked plane correspond with those furnished only for planes of the model St. Roman flew.

DIEUDONNE COSTE and Captain Rignot, who recently attempted to break the long-distance record established by Col. Lindbergh, were forced to land in the Ural Mountains by bad weather. They hope to try again at an early date.

CAPT. PELLETIER D'OISY, the well known long distance flyer, and his navigator, M. Conin, narrowly escaped death when their plane, carrying 5,000 litres of gasoline, came down 2½ miles after taking off at LeBourget, being unable to reach an altitude of more than 30 feet. The two fliers leaped from the cockpit unhurt just before the gasoline tanks exploded and enveloped the machine in flames. They were attempting a non-stop flight of 4,400 miles to Karachi, India.

ENGLAND

TWO British fliers have announced their intentions of making transatlantic flights in the near future. Capt. Robert Macintosh and Lieut. Col. F. Minchin, Imperial Airway pilots, plan to hop from London to New York, refuel and, within 8 hours, fly back to England.

Capt. F. T. Courtney of the Royal Air Force expects to fly from Friedrichshafen, where his Dornier-Wal all-metal flying boat is being tested, to Calshot Naval Flying Base, Southhampton; from thence to Valentia, Ireland; refuel; hop off to Newfoundland; refuel; and on to New York. Remaining in New York a few days, he will fly back to Southhampton, stopping at Newfoundland. Capt. Courtney's companions will be Lieut. F. W. M. Downer, navigator, and R. F. Little, engineer. His flying boat has a wing spread of 74 feet; two 440 h.p. Napier engines; cruising speed of 100 m.p.h.

FLIGHT LIEUTS. C. R. CARR and P. H. MacWorth, starting the second attempt of the Royal Air Force to make a non-stop flight of 4,000 miles to India, were forced down by oil trouble at the Martlesham Heath Airdrome, June 18, 85 miles from their start at Crandon in Lincolnshire. The fliers were not hurt and their machine, a Hawker-Horsley day bomber, was not damaged.

The first R. A. F. undertaking was made by Flight Lieuts. Carr and Gillman, who took off on May 20 from Cranwell on a distance flight towards India and who came down 45 miles southeast of Bander Abbas on the Persian Gulf after covering a distance of 3,419 miles. They made a wonderful flight even though falling short of their objective, which was Karachi.

CANADA

ELLIOT Airport, Hamilton, Ontario, which opened on May 1st, is believed to be the only government licensed, privately owned, commercial land airport in Canada. Jack V. Elliot financed and owns the organization and equipment. The Jack V. Elliot Air Service is the only aviation school operating in Canada which has turned out pilots approved by the Dominion government.

In addition to the large airport on the Beach road, the Elliot air service has small field or airdromes with hangars for passenger carrying, at Clappison Corners and at Niagara Falls between the falls and Chippewa. Besides the flying school course, commercial flying service is operated.

AN agreement between the United States and Canada with regard to the entry of United States pilots and aircraft into Canadian territory has been extended to and including October 31, 1927, and has been made reciprocal.

This arrangement has been in effect since 1922 and provides in general that when an American machine or pilot wishes to cross the international boundary and fly in Canada notification should be sent, in advance, to the secretary of the air board, Ottawa, giving the date of the proposed flight, the owner's name and address, the pilot's name and qualifications, the type of machine to be used, the route and duration of the proposed flight and the purpose for which it is being undertaken. All such aircraft must be licensed.

Canadians observe the same rules when they wish to cross and fly in American territory, communicating with the Secretary of State.

CANADIAN air mail routes will be established this year providing the Post Office Department's request for a subsidy of 15,000 pounds is granted by Parliament. Tenders are to be asked for from private flying companies, and it is expected that the first air routes will be designed to carry mails from the Atlantic seaboard and the Gulf of St. Lawrence to Quebec, Montreal and Toronto, and from Pacific ports eastward.

AIRPLANE Patrol of Forests in Northern Ontario, combined with other conveniences, has reduced the loss by fire in the district from a yearly average of over 1,000,000 acres to 80,000 acres during the past season, according to an address by Hon. W. F. Finlayson, Minister of Lands and Forests, in the Province of Ontario, at the annual convention of the Canadian Lumbermen's Association, Montreal, in February.

Elliot airport, Hamilton, Ontario, home of Canada's first and only commercial aviation school.

GERMANY

TWO German airmen will attempt transatlantic flights during this summer. Ernst Udet, noted constructor and airman, will start from Munich with New York as his destination in a specially constructed Rohrbach plane with two motors—a semi-hydro-airplane type. He will be accompanied by an expert aviator and a pilot.

Otto Koennecke, war ace and Lufthansa pilot, intends to fly a 3-motored Junkers plane from Berlin to San Francisco with a short stop in New York. He hopes to start the latter part of July, accompanied by a radio operator and 2 passengers. He will fly via the Azores.

THE breaking of the world's altitude record for light powered planes by the Klemm-Daimler L-20 on March 24, 1927, has attracted much interest in this type of machine. According to the testing office of the German Government this machine reached an altitude of more than 20,505 feet. The exact height reached cannot be determined owing to the fact that the barograph was ruled to record a height of only 6,000 meters.

Some of the characteristics of this light plane are as follows: the landing speed is 21.7 m.p.h. for the single seater, and 27.9 m.p.h. for the two-seater. The fuel consumption of its 20 h.p. Mercedes engine is only 1.58 gallons per hour. The rate of climb at low altitudes is approximately 8.2 feet per second. The maximum ceiling is 21,325 feet. The useful load is 716 pounds, divided as follows: 2 passengers of 165 pounds each; 331 pounds of fuel to cover 4½ hours' flight; and 55 pounds of baggage. The maximum speed is approximately 75 m.p.h and it is said to possess a safety factor of 9 to 1.

FERDINAND SCHULZ on May 3rd established a new gliding record by keeping his glider in the air for 14 hours, 7 minutes. The previous official duration record for gliders was held by Commandant Massaux (France) who remained in the air for 10 hrs. 29 min. 43.4 sec. on a Poncelot Vivette glider at Vauville on July 26, 1925.

Two years ago Herr Schulz made a glider flight lasting 12 hrs. 6 mins. in the Crimea, but this flight, having been made in Soviet Russia, was not officially homologated.

On May 14, Herr Schulz succeeded in gliding for a distance of 62 kms. (38.5 miles), along the Baltic coast from Rositten to Memel. The previous longest glide in a straight line was made by Herr Max Kegel, who covered 34 miles during the 1926 Rohn meeting.

Recently Herr Espenlaub attached his glider to an airplane and was towed to a height of 5,000 feet, when he loosened the tow line and glided to a successful landing.

What is believed to be the first glider flight from an elevation of 9,000 feet was made by Ernst Udet, German ace, on April 29th. From the top of Zugspitze, the highest peak in the Bavarian Alps, he successfully negotiated his glider to a point of landing 9.3 miles airline distant, in 25 minutes.

The 15-passenger German Rohrbach all-metal monoplane flying boat.

BELGIUM

SABENA (Société Anonyme Belge d'Entreprises de Navigation Airienne), the company which holds the exclusive franchise for the operation of civil aviation lines in the Belgium Congo, has announced the establishment of a regular aerial service connecting Boma, on the coast at the mouth of the Congo, with Elisabethville, in the far southeastern corner of the territory. Handley-Page tri-motored planes are used, and the flights start from Boma every eight days, following the arrival of the Belgian mail steamers from Antwerp. The time required for the trip from Boma to Elisabethville, a distance of 2,050 kilometers (1,280 miles), is two days. To cover this distance by any other method, such as using the Congo and the Kasai Rivers as far as Luebo and traveling overland from there, would require 50 days.

The route is divided into the following three sections, of which the first two are flown on the first day, and the third on the second day: Boma to Leopoldville, 350 kilometers, in flight 2 hours 30 minutes, with landings at Matadi and Thysville; Leopoldville to Leuebo, 850 kilometers, in flight 7 hours, with landings at Bandundu and Ilebo; and Luebo to Elisabethville, 850 kilometers, in flight 8 hours 30 minutes, with landings at Kanda-Kanda, Kamina and N'Gule (Elisabethville). Throughout the flight there are emergency landing fields every 15 kilometers.

The rates are approximately 33 cents per passenger-mile, with the freight rates varying considerably according to the length of the haul.

The outward fares are approximately 20 per cent lower than the inward, and a 5 per cent reduction is made on the sum of the two fares for a round-trip ticket, the journey to be completed within a time mutually agreed upon between the passenger and the company. The operators also offer to make reductions amounting to as much as 10 per cent for contract work, either passengers or goods.

Sabena supplements this aerial service with a line of hydroplane boats, motored with Benz 200-horsepower motors and driven by aerial propellers. These boats work up and down the Congo and the Kaisai, touching at towns and settlements too small to be reached by plane. They are particularly designed for shallow waters, and will operate in as little as 15 centimeters when carrying their full useful load of a ton and a half.

SOUTH AMERICA

MAJOR SARMIENTO BEIRES, Portuguese flyer, who was missing for a week while on a return flight to Lisbon, arrived on June 14th at the town of Vigia, on the mouth of the Amazon. Beires and his companions were rescued by a fishing boat after his plane, the Argus, fell into the sea on June 7 due to the loosening of a wing while attempting a flight from Para to Georgetown, British Guinea.

Major Beires last March flew across the South Atlantic from the West African coast to an island off the Brazilian coast and thence to the South American mainland and was attempting to return to Spain by air.

THE Brazilian transatlantic plane *Jahu,* under command of Commander de Barros, arrived at Pernambuco, Brazil, on June 5 from Port Natal. Commander de Barros left Genoa last October and by stages reached Porto Praya on November 12. Leaving Porto Praya on April 28, the plane fell into the sea near the South American coast, was picked up by a steamship and forced to Fernando do Noronha, where it was repaired and then flown to the Brazilian mainland.

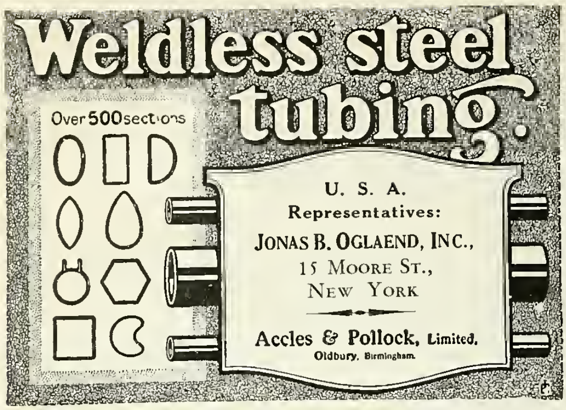
THE Junkers Aviation Company has recently inaugurated a commercial airplane route from Buenos Aires to Rio de Janeiro and Pernambuco. The airplane used on this route is a 3-engined Junkers. This company is not carrying passengers at the present, but expects to do so shortly. A recently organized company under the title "Companhia Nacional de Navegacas Aerea" (National Company for Air Navigation) plans to develop a commercial air line.

ITALY

COMMANDER FRANCESCO DE PINEDO, piloting the Santa Maria II, arrived at Ostia, at the mouth of the River Tiber, on June 16, completing his 25,000-mile aerial journey over four continents.

Premier Mussolini, the highest state officials, and many thousands of his countrymen enthusiastically welcomed de Pinedo on his return from his great flight.

He purposed to prove that aviation has now reached such a pitch of perfection that it was possible, without any especial preparation, to fly over oceans and unexplored countries with a reasonable degree of safety. This he has triumphantly shown despite the two incidents which twice threatened to cut his flight short.



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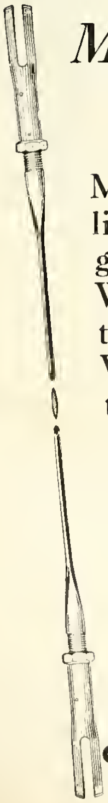

Macwhyte Tie Rods on Vought Planes

MACWHYTE Streamline Tie Rods give 10% greater flying efficiency. Wind resistance is cut to the absolute minimum. We will be glad to tell you the details. Ask for complete information about Macwhyte Round Tie Rods for internal bracing.
Macwhyte Company,
2907 Fourteenth Ave.,
Kenosha, Wis.

MACWHYTE
Streamline TIE RODS

(Continued from page 42)

the nation's glory, to keep the market clean of swindles.

A committee from the industry should be formed, headed by some such man as, say former Postmaster General Frank H. Hitchcock, to investigate and issue warnings or approvals, as the case may warrant. Crooks already have begun to try to flood the country with phoney airplane company stock. It sometimes gets favorable publicity. Newspapers don't want to publish articles approving doubtful enterprises, but not even newspapers always are in position to know whether or not the loud, impressive talkers, the men with pockets full of greenbacks and big advertisements which they wish to run at maximum rates, really are square, honest and safe—worthy guardians of an industry and safe henchmen of what is sure to be, in an almost incredibly short time, one of the nation's greatest interests.

This, therefore, is a time to watch . . . your . . . step.

THE RYAN NY-P AIRPLANE

(Continued from page 38) of gasoline more than the load for which it was designed.

Weight Characteristics of the Ryan NY-P Monoplane As It Left New York for Paris

Useful Load	
Pilot	170 pounds
Miscellaneous	40 pounds
Gasoline—450 gallons (California at 6.12 pounds per gallon)	2,750 pounds
Oil—20 gallons at 7 pounds per gallon)	140 pounds
Total useful load	3,100 pounds
Gross Weight	
Fully loaded (25 gallons gasoline over design load)	5,250 pounds
Net Empty Weight	
Weight empty including all tanks, special equipment and instruments	2,150 pounds
Weight of excess tanks and special equipment and instruments (assuming a gas capacity of 60 gallons and oil of 5 gallons sufficient for ordinary flying)	450 pounds
Net empty weight (2,150—450)	1,700 pounds
Total Useful Load	
Total useful load (5,250—1,700)	3,550 pounds
Ratio of Weights	
Ratio of useful load to gross weight	68
Gross weight	3.1 times net empty weight
Loading (Fully Loaded)	
Wing loading	16.5 pounds per square foot
Power loading (223 b. h. p. at 1,800 r. p. m.)	23.6 pounds per b. h. p.

MAGOSY & BUSCHER
Telephone Canal 3693
Specialists in
Metal spinnings and hand-hammered work in all kinds of sheet metal.

Streamline fairings for wheels, alum cones for propellers. Our products are being used by CURTISS—CHANCE VOUGHT—SEVERSKY—IRELAND

We make to order anything in the line of sheet metal goods.

ESTABLISHED 1900

MAGOSY & BUSCHER
120-6 Walker St., NEW YORK CITY

A NOD AND A WINK

(*Continued from page 44*)

of us. And spring comes sooner to some than to others. I'm about in the summer of existence, myself, and I hope to jog along through the autumn, writing a little and flying a little and spreading a few little smiles here and there until the winter. And then I hope to hibernate, like a fat old bear, and wake up again and sniff the smells of spring, and see the fresh green grass and hear the water rippling down the bed of the brook—a brook in quite another world from this one—a world in which I hope I won't make quite so many mistakes as I have made here.

So you see, folks, this thing they call Death isn't so terrible after all, if only you greet him without too much fear, and understand him for what he very probably is—merely a kind old messenger who comes and beckons to us to follow him away off there to the new springtime.

But don't think that I've given up hope of finding these good fellows alive. If they landed in Labrador, they are probably alive and well and living with some fishermen. The first boat doesn't come out of there until July—and they may be on it. I hope so. Or we are flying to Labrador soon, and I hope that we find them and bring them out. But we're putting off going there and are searching Newfoundland first, for if they are alive here they certainly need help, whereas if they are in Labrador they are not in need of us. However, it's all on the knees of the gods, and meanwhile we are plugging along whenever we have weather that is at all possible for flying.

Yesterday, for example, we took off in the face of a blinding fog that filled Placentia and Fortune Bay, although it was clear in the Arm where we had the *Jeanne D'Arc*. We skirted part of the fog-filled area, flew over other parts, and came eventually to the country way back in the Middle Ridge region, all of which was clear of fog from Paradise Sound right to Port Blandford, where we landed and spent the night, flying to St. John's to-day for repairs. The Middle Ridge country looks better than the Burin and Placentia Peninsulas. In the pond region in from Whitbourne a man might walk for 100 miles in order to cover say 20 miles in a desired direction. There are ponds everywhere, and practically no streams to follow to the sea. It is a flat, marshy country, thickly covered with scrub spruce, through which a man armed with an axe or machete would have great difficulty in forcing a way. We have axes, and we have a portable rubber boat, so we could cut our way through brush and paddle across ponds. Yet I venture to say that were we to get down in the middle of the wooded pond country that we would be more than a week getting out.

Well, I'll not write pessimistically any more. If you come to think of it, another difference between a cow and a human—and possibly the chief difference—is that a cow can't laugh and a human being can. A cow has no sense of humor, you know—it would make an excellent mascot for the Navy, by the way—so whenever you run across those kind of people who pride themselves on the fact that they take life seriously, you just tell them, "So does a cow." And if that won't stop them, just walk away from them, crying softly to yourself about the immutable sadness of some people's lives. But don't be sad yourself—even if you have to sleep in a room such as I slept in one place in Newfoundland. I want to tell you about it, so you can look around your own room and feel happy that you're not here with me.

In the first place, to get into it you had to stoop, or else

S. S. White Tachometer Drive Shafts

OUR tachometer shafts have been subjected to the severest tests and have always met every task demanded of them. Built to U. S. Government specifications, of correct design, unsurpassed workmanship and the finest materials obtainable.

We supply them to the U. S. Army and Navy.

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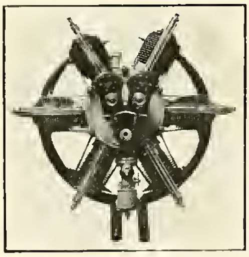
ANZANI



SCARCELY a day passes without here or at the Courbevoie factory of letters telling us how we should change Anzani Engines, make them lighter, give them more horsepower per cubic inch, make them cheaper, different accessories, etc. In answer to this we wish to quote from a statement made by M. Anzani 10 years ago—it is almost prophetic.

"If we have up to this time retained these principles (air-cooling, simplicity, low R.P.M., etc.) it is because my experience has shown me that for one thing simple mechanisms are always the best, and for another that a mechanical organism, like a human, is able to furnish continuous performance without danger only when working at a lower output than its maximum."

That is the principle upon which 19 years of Anzani success has been founded and upon which the new Anzani with standard designs and interchangeable parts, completely available in United States, are built.

Brownback Motor Laboratories, Inc.
NORRISTOWN, PA.

bump your head on the door casing. I think this country was peopled originally by a race of dwarfs—and they still have the doors. I never could remember that I was six feet, and the door was five feet eight. I nearly battered that thing down with my head a dozen times. And when I got in, what was there to cheer me? A lot of mottoes on the wall. They started off with "There's no place like home," done in tatting, and went right on to a lot of biblical quotations done by some fiend of a printer with a color complex and no mercy on the eye of the beholder. Then there was a lady, apparently coming out of a mountain brook and a night-shirt, fanning herself. I'd have liked to knock her over with her own fan. Then there was a print of the late King Edward who was a real good old sport from all I hear—only he's hardly a bedroom decoration. Still, I dunno about that. I guess we'll have to pass him. But I certainly won't pass two china atrocities on the mantel. There was a spotted china horse about a foot high. Now, I suppose someone bought that thing and liked it. But I detested it. It had about 200 spots scattered over it, and it had a bad eye. One of those glaring, staring blue eyes. I never saw a real horse with a blue eye, but this nag had one—the other was chipped off. And when I'd try to write a report this equine horror would glare at me, and I'd have to stop. I turned him around—and his solid china tail stuck right out at me. It was raised as though in derision. Then I put him under the bed—and sat imagining him glaring at me through the feather mattress—yes, it had feathers. You started the night on top of it and woke up next morning with the contraption bulged all around you, and you lying on the slats.

In addition to this horse—and I suppose they were put there to help the horse to cow visitors—were a man and a woman in china. They had come from Austria-Hungary—and those Hungarians needn't expect any sympathy from me after letting that bit of statuary out to Newfoundland. The woman was bad enough, in all conscience, but the man was worse. He had an awful leer on his face and a banjo in his hand, with which he was apparently about to brain his companion. I'm sorry he didn't, for she deserved it. She carried a thing like a dish platter, though I believe it was intended to represent a tambourine. They were a fearful pair and deserved to come to some bad end, which, I am happy to report, they did. I dropped them out the window. I was going to drop the horse the next night, but the owner got wind of it and removed the thing.

Of course there was no water piped to the room. I had a pitcher and basin, one of those sturdy affairs, on a wash stand.

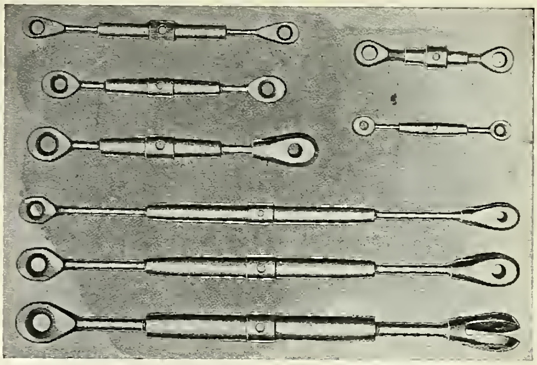
Scattered here and there about the room were numerous souvenirs that might have delighted someone. They left me cold. There was a moustache cup—have you ever seen one? Uncle Abner used to use one when he came to our house years ago. It saved us quite a lot, I recall. If you'd ever seen Ab working through a cup of tea without the whisker fender on that cup you'd know what I mean. This moustache cup in my room had painted on it "A present from Heart's Content." Then there was a shaving mug, with a place for the soap on top, labelled, "Sweet thoughts of Fogo." This Fogo, by the way, is a small town about here, of which a Newfoundland author has written a book called, "Why Girls Leave Fogo." I haven't read the book, but I've been to Fogo, so I don't need to. I just tell you about my room so you'll understand some of the suffering Cotton and MacPhail and I are going through up here in the country where men are men and where the women still wear woolen stockings—and I don't know about the rest of it but I can use my imagination, although I am a trifle old for it.

But they are wonderful people, these Newfoundlanders, and theirs is a wonderful country. Never before have I experienced so much kindly helpfulness from so many people. They are simple, kindly folk, and even in the short time we have been here I have grown to love them. These folks are hospitality plus. They are interested in the expedition and are willing and anxious to do all they can for us. Job Brothers, of St. John's, and especially their Mr. Maurice Job Taylor, have been our kindly fathers, sacrificing their time and their money to help us. Messrs. Bowring of the Red Cross Line carried us and our plane free on one of their homey, comfortable steamships. If you ever get a chance to come to Newfoundland aboard the *Sylvia*, don't miss it. Captain James of the *Sylvia* makes the ship a real floating home—and there's a bar aboard. Not that you or I would enter it, of course. But it's there as a curio for American tourists. I glanced at it in passing and was going right on when a lurch of the ship threw me inside. I was never so embarrassed in my life. I really blushed. Or I was blushing when I came out, I mean. But that was hours later. It takes quite a while to work up a good healthy blush. I was made a member in good standing in the Ancient and Honorable Order of Froth-Blowers, a charitable institution. I believe the headquarters are in Kansas.

But I must tell you about our visit to St. Pierre—a little bit of old France over here in the new world. We were entertained by His Excellency the Governor of St. Pierre and Miquelon, Monsieur E. Bensch, a gentleman who spoke no English but who evidently understood the universal language of man; for he took one look at me and then in rapid French ordered the butler to bring in a tray on which reposed several bottles and glasses. Unfortunately, or fortunately, as the case may be, or might have been—human nature being frail—as we were making only a short formal visit I had no chance to get into my stride, which will ever remain one of the great regrets of my life, for I never drank a more excellent cocktail than the one solitary sample that I engulfed merely in the way of social duty. As a member not only of the Anti-Saloon League but also of the Women's Christian Temperance Union, I hated to take even that one glass (Kansas papers please copy). But I thought the Governor might feel hurt if I refused to drink with him—and I've never yet hurt a man's feelings by refusing his proffered hospitality, even if it was made in Newark only last week, which this wasn't, by any manner of means. I thought first I'd drink water and say, "I drink to France in America's (official) national beverage." But as I had the cocktail in my hand, and couldn't seem able to set it down without giving offense both to the Governor and to my own feelings, I simply said, with great dignity, "I drink to France in the national drink of New York, when they can get it. I am the unofficial representative, not of America, but of Jimmy Walker, Mayor of New York."

His Excellency said, through his interpreter, that he hoped when we had concluded our search that we would return to St. Pierre and stay at least overnight. I said, "Oui, merci, M'sieur," which used up all my French, but thank Heaven I had enough to get that far with. Which shows the advantage of an education. Suppose I hadn't known the French for "yes" and had said, "Non, M'sieur!" That would have meant another international complication

(Continued on page 110)



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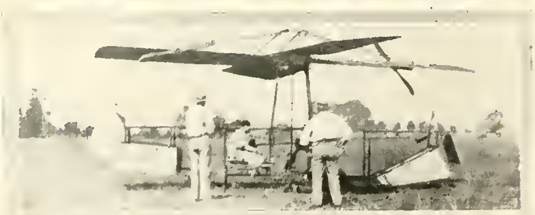

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LEO ORTEGO
1927 Kelly Street, Alexandria, La.

(*Continued from page 102*)

—besides doing that nice secretary and me out of one large, wild night. I liked that secretary. You know, we old night owls can spot each other a mile away. Birds of a feather always dip their beaks in the same brook.

Well, it's ten o'clock and this cute little train will be in soon. So I must ring off and post this in the mail-car. But before I say good-night and drop off into the semi-wilderness to rejoin the *Jeanne D'Arc,* I must tell you a little yarn about the Newfoundlanders. They love their country and their homes, and are more fond of Newfoundland than Bostonians are of Boston. The standard tales here is of the visitor who went to Heaven and found the Americans and the Frenchmen and the English and the Germans and all the other nationalities enjoying themselves immensely, wearing their halos at a cocky angle, singing and carrying on and simply tickled to death with the place. Over in one corner were a bunch of miserable looking people chained down to the golden floor. They were Newfoundlanders, who had to be chained down to prevent them from walking back home.

AVIATION'S FUTURE IN UNITED STATES

(*Continued from page 41*)

of Commerce, made a decisive step in this direction.

Prior to this time, with few exceptions, the attempts to establish commercial air service had met with failure. The accidents resulting from unreliable equipment and lack of suitable airports and maintenance facilities have served only to reduce whatever confidence may have existed in the practicability of aerial transportation as a business, and as a consequence American capitalists who might have provided the necessary financial support to insure the safety and success of this new industry were loath to invest in such an apparently uncertain venture.

This situation in Europe was relieved by Government subsidy, and it is an undeniable fact that to this action is largely due the credit for the lead in commercial aviation which Europe now has over this country.

The United States has never directly subsidized private industry; whether or not its policy, as applied to aviation, is sound, remains to be seen. It appears self-evident, however, that aviation is entitled to the same support that has been and is given to other methods of transportation. Railroads have been encouraged by land grants, harbors and lighthouses are provided and maintained for water craft at the expense of the Government, and good roads are provided for automobile traffic.

Given this same support, which it is understood the new Bureau of Aeronautics in the Department of Commerce is prepared to provide, it is my belief that aviation in America will soon take its proper place with that of foreign countries. No nation in the world offers greater possibilities for the utilization of air transportation than our own. This statement is based largely upon the great distances which may be traversed without leaving the continental United States.

The map of Europe superimposed over that of the United States, of the same scale, reveals some interesting and even startling facts as regards comparative distances. The recent flight of the Army Pursuit group from Selfridge Field, Michigan, to San Antonio, Texas, in one day, covered a distance considerably greater than that from Berlin to Madrid, and the daily air service which was maintained during the past Summer between Philadelphia and Norfolk compares favorably with the London-Paris service.

THE "AMERICA'S" FLIGHT TO FRANCE

(*Continued from page 7*)

nicating with Roosevelt Field and a range of 1,600 miles in communicating with the Radio Corporation of America's station at Chatham, Mass.

Commander Byrd and his comrades were received with tremendous ovation at Paris, where they went on July 2nd after passing the night as the guests of Prefect Hemiat at Caen. To the Frenchman they are much greater heroes than if they had quietly set their plane down at Le Bourget according to their plans. Cheering throngs mass the streets wherever there is a chance to catch a glimpse of the Americans.

The primary purpose of the flight was accomplished and even more scientific data has been gained because of the unusually difficult weather they encountered.

The purpose of the America Trans-Oceanic Company has also been fulfilled. Thirteen years ago, Rodman Wanamaker formulated the first plans for a New York to Paris flight by a heavier-than-air machine. He formed the America Trans-Oceanic Company and had a Curtiss plane built to order for the flight with Lieutenant John Cyril Porte as pilot. When England entered the World War, Lieutenant Porte, being a reservist in the British Naval Air Service, was called to his colors and caused the postponement of the company's plans. It was not until this year that Mr. Wanamaker revived the activities of the company.

No expense was spared and every detail was carefully attended to to make the flight a scientific success. It is estimated that to date Mr. Wanamaker has spent about $500,000 to make his dream of conquering the Atlantic with his own plane a reality.

Although the flyers did not win their goal, they made a flight such as must remain epochal in air history.

AIR—HOT AND OTHERWISE

(*Continued from page 40*)

have no further occasion to worry about the services. Eliminate the departmental politicians, the service propagandists and the other easy-jobbers, and our fighting forces will compare with any other on the surface of this earth with odds to spare.

APPARENTLY not only the people of the coasts but those of the inland states have been aroused to some extent, as is evidenced (for instance) by the standpoint of Congressman James, of Hancock, Michigan, the very able acting chairman of the Committee on Military Affairs during most of the recent session.

He knows and says that the transocean flights prove this country subject to attack by planes flying from other countries overseas.

He is convinced that nothing can make us secure except a single Department of Defense including Army, Navy and the Air. He knows that until we develop commercial aviation we cannot have an adequate air defense and that until we have an adequate air defense we shall not have any real defense at all.

He declares (what we of AERO DIGEST know) that practically every commercial plane of Europe can be converted into and used as a fighting plane within three or four days and that a German company is preparing to begin a regular transatlantic service within two years. In this statement we are reasonably sure he errs upon the side of conservatism.

(*Continued on page 112*)

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26 x 4 dandy unused tire $7.50, or slightly used $5, or moderately used $3.50; new tube $2.25; 26 x 4 wheel with streamlines $10, or less streamlines $8.50; DH wheel $10; dandy DH 750 x 125 tire $10, or unused (passable) $7.50; surplus tube $1.75, or new production tube $3.50. New Navy type chamois lined leather helmet $5.50; all chamois helmet $4.50; RAV Rubber Bound Resistal wide-vision goggle $5; NAK Resistal goggle $4.50; Triplex non-shatterable wide-vision goggle $4.00; Triplex oval non-shatterable goggle $2.50; Italian gogglette $4.25.

FIREWORKS:—Day or night bombs $4; flag shell $3.75; huge smoke trails (last 5 minutes) $3.50. Fusillading shell $6. Spectacular night plane display, with instructions (lasts 14 minutes) $36.

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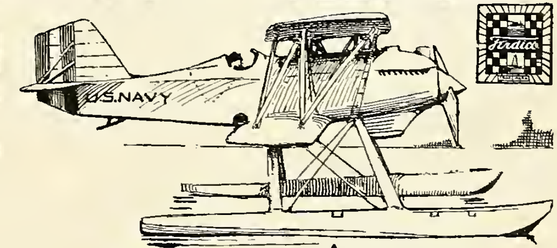

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NICHOLAS-BEAZLEY AIRPLANE CO., Inc.
MARSHALL, MISSOURI
"We Will Be Here Tomorrow"

(Continued from page 111)

That peace implements of all kinds are more important than exclusively war implements in actual combat everybody with a functioning mind is certain. The taxicabs of Paris that carried the French troops to the front when the need was desperate did more to win the war than any tanks. Our sailors when they reached the English ports before they went upon their war duty at sea could not have fought had they not been clothed with English woolens made during peace time in English mills. (You didn't know that, did you? Ask Admiral Sims.) The sword is fashioned from the ploughshare much oftener than the ploughshare is turned into the sword.

We cannot have a great war air service unless we first have a great peace air service!

Congressman James interprets rightly all the recent long and splendid all-American flights. He knows that they may presage long flights which will not be all American, but all European, or even all Asiatic, and made by governments who will have turned their factories of peace-time aviation into arsenals of war-time aviation.

A friend told Congressman James recently that every European peace-time plane, every peace-time European aircraft factory, is designed primarily for war-time use, the plans then being adapted to the purposes of peace. In Europe, now, (recently so terribly the victim) national expense comes first. He expressed the certainty that the American feat of landing airplanes upon over-ocean foreign soil would be duplicated presently (as we all know could be done to-day) by European airplanes hopping over-ocean to American soil. A German-American flight has been planned since we spoke.

"These flights show conclusively that facilities for air defense and air attack must be placed upon a footing equal with the footings of the land and sea forces of the nation."

THERE is the judgment of an inland Congressman. Inland Congressmen have been celebrated in the past for their calm at thought of foreign invasion, as is natural, for foreign invasion in water-borne fleets would be most unlikely ever to reach their territory.

But now? Such inland congressmen as have accurate imaginations realize that within a brief period seacoasts will be, politically, mere imaginary lines, as State boundaries now are. No imaginary line will stop invaders.

In the past it has been true that the brief voyage over the seven miles of sea commanded by Sandy Hook's big guns would be harder for an invading fleet from eastward than the three-thousand miles preceding them. Unless we have a competent air force to repel air invasion those seven miles will be no harder than any other seven. The guns of Sandy Hook? Air pilots with their bombs can wipe them out—or safely laugh at them as they fly over above range and save their bombs for inland use. No land-battery can certainly reach any aircraft. None possibly can reach aircraft flying at the heights now easily attainable. Battleships, cruisers, scouts and destroyers are helpless when an airplane buzzes invisibly among the clouds above and over them and across the barrier which they have fondly hoped to form.

As a boy I stood talking with an aged farmer in an Ohio potato field. I saw far overhead a big bird carrying something.

"A hawk is up there with something in its claws," I said.

The farmer, wearing no "specs" squinted up and, his eyes rheumy with age, grinned. Then, anxious to confound my young, imaginative mind, he declared, reprovingly: "There ain't no hawk and it ain't carrying nothing."

Just then the hawk dropped that which it was carrying. A talon may have penetrated it and the fragrance may have made the startled fowl let go—for the burden was an ancient egg pilfered from some guinea hen's "stolen" nest out in the woods. I know the egg was ancient because, used as a bomb, the gas its breakage released almost at the feet of my farmer friend, was to him and even to me at a short distance almost of an asphyxiating kind.

If the United States of America does not establish its commercial aviation on a scale greater than that of any other nation in the world, and thus equip itself as have the Europeans Congressman James tells about, to provide military aviation quickly when the time of need comes, the gas dropped by bombs upon the farmers of this country will be REALLY of an asphyxiating kind. It will be dropped upon the country dweller and the city dweller and their families and properties, upon their treasured structures from vast skyscraper to humble cottage, upon their loves and hopes and happiness.

This problem cannot be dissociated from the others of our national defense and this inland statesman is among the growing number who, in spite of Army and Navy propaganda, know that. Read further from the utterances of the Wolverine deep thinker and plain speaker:

"The only proper solution of the situation is the creation of a single Department of National Defense. It should be presided over by a member of the Cabinet who should be in supreme control of all the sea forces, all the land forces and all the air forces, subject to the orders of the President, our commander-in-chief."

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We already have come nearer than most people imagine to a Department of National Defense. Several bills for the creation of such a department with a new Cabinet officer to represent the Air Service, were introduced in the last Congress. Like many other worthy ideas they perished, for the time, when Congress adjourned, as did the bill of the Morrow Board for increasing Army Air Corps personnel.

Congressman James declared that the opponents of all legislation of the sort which has been offered have scoffed at the thought that the United States ever could be attacked by air from foreign countries. But now—well, how about Lindbergh? How about the Bellanca flight? How about the famous and successful venturers above the wide Pacific?

Congressman James grins at his little colleagues of slight vision who have underestimated the Air Service.

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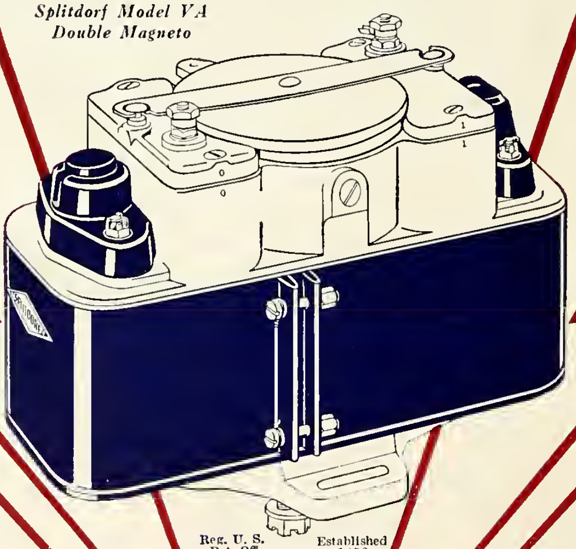

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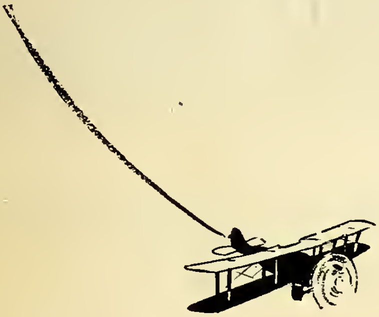

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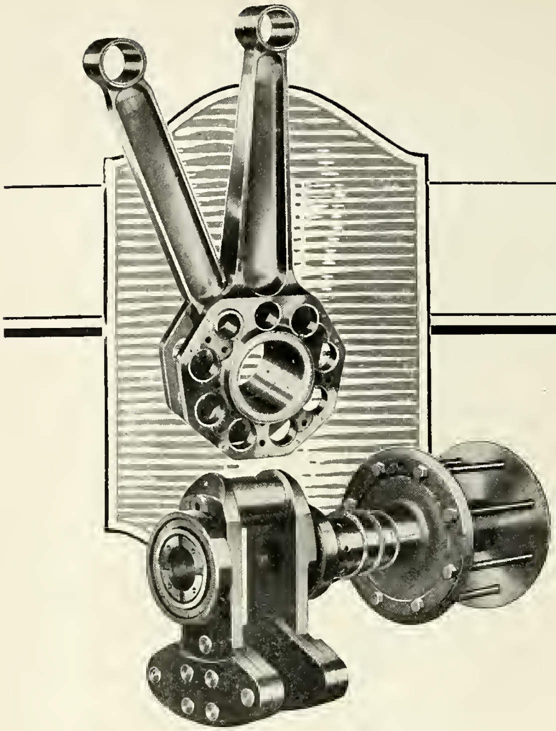

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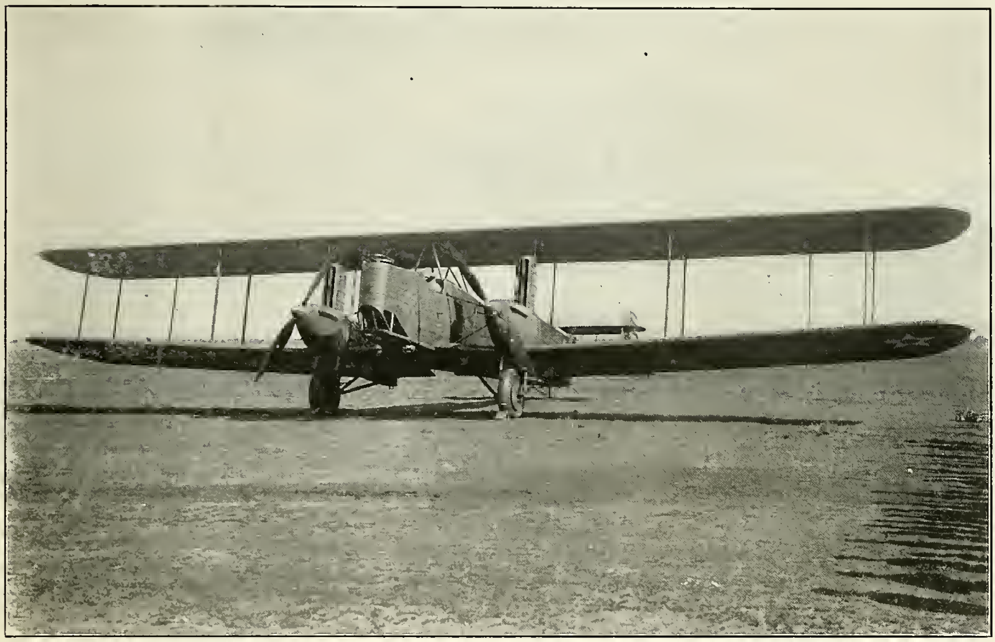

THE CURTISS "CONDOR"

AGAIN, in coöperation with Air Corps experts, the Curtiss engineering group has produced a new type of military airplane—the "Condor" night bomber, developed for the United States Army Air Corps. Powered with the new 600 H.P. Curtiss geared V-1550 engines, and carrying a useful load of more than three and a half tons, the "Condor" presents an entirely new conception of the performance possibilities of modern heavy bombardment aircraft.

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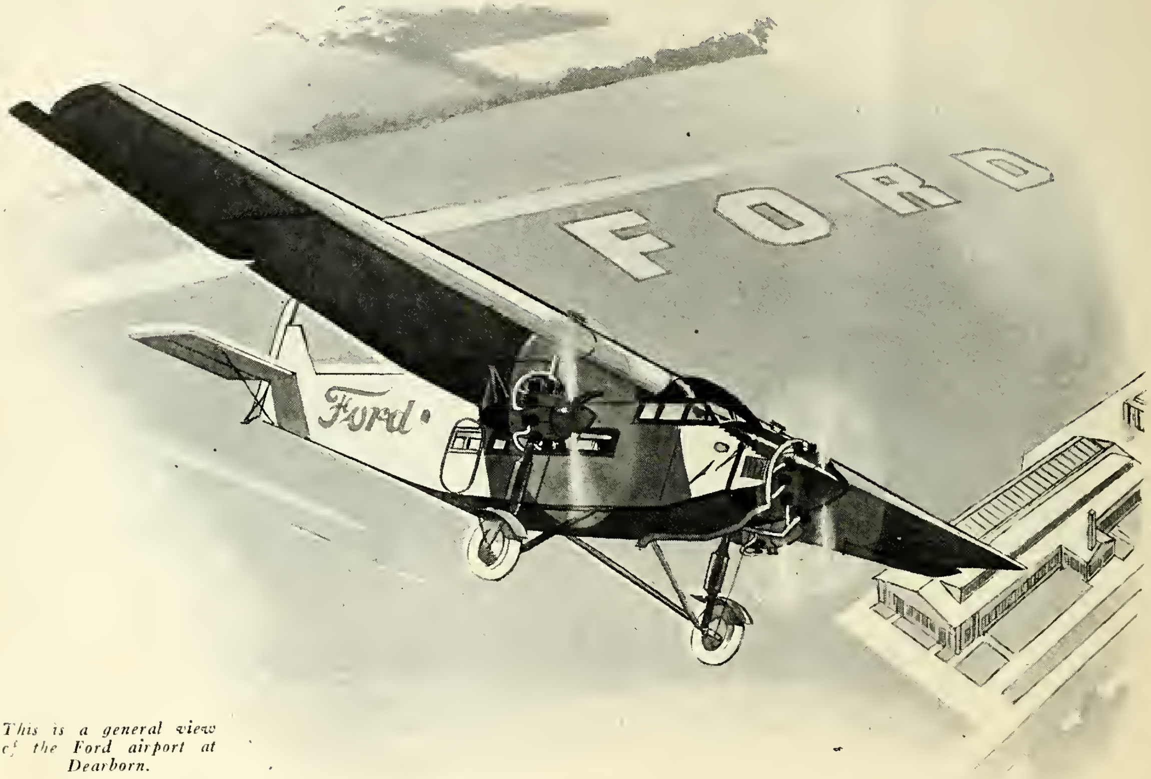
The interest and resources of the Ford Motor Company *are squarely behind the development of commercial aviation and production of the* Ford monoplane



This is a general view of the Ford airport at Dearborn.

THE Ford Motor Company acquired The Stout Metal Airplane Company after two years of study of aeronautical developments throughout the world. It was clearly indicated that a new and vast industry could be built up around the airplane.

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Operations have been carried on daily, linking Detroit with Chicago, Cleveland and Buffalo. The distance flown exceeds twenty trips around the world. This has been done in all weathers and all seasons.

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Trips completed - - - -	3,303
Forced landings	
Acc. weather - - - -	54
Acc. mechanical - - -	34
Flying hours - - - - -	6,875:00
Miles flown - - - - -	611,961
Freight (in lbs.) - - - -	3,749,318
U. S. Mail (in lbs.) - - -	13,167:3

Inevitably we have learned much about costs, earnings, organization and maintenance of air-lines. The results of this experience are available to those now operating or contemplating air-lines.

Further information gained from technical experiments conducted by the Ford Motor Company may also be obtained. Facts and figures on construction and operation of commercial planes will be supplied to those in the industry who wish them. Every person who wishes to visit the Ford airport at Dearborn is cordially invited to do so.

We will be glad to mail you, without cost or obligation, our new thirty-page booklet, which contains a statement of the relationship of the Ford Motor Company to aviation; suggestions on the organization and financing of air-lines, information about landing fields; illustrations and description of the Ford monoplane; and much additional material. It will be sent free at your request.

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THE STOUT METAL AIRPLANE CO.
Division of Ford Motor Company
Dearborn, Michigan

AERO DIGEST
THE MAGAZINE OF THE AIR
Vol. 11 No. 2
AUGUST, 1927

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Out of the West! A new Boeing air mail plane in flight from the Coast to Chicago.

OUR TRANSOCEAN FLYERS RETURN

AFTER a continuous round of entertainment following their arrival by air on the coast of France, Commander Richard E. Byrd, accompanied by Lieutenants Noville, Acosta, and Balchen, his crew, on July 12th boarded the *Leviathan* at Cherbourg bound for New York. Clarence D. Chamberlin, who made the non-stop distance record on his flight from New York to Germany, was also on the liner.

The *America's* crew, a few days previously, had received the official congratulations of the City of Paris. Making their way through streets jammed with cheering throngs, the flyers reached the historic Hotel de Ville, or city hall, and after signing the Gold Book of the municipality, each of the six aviators was presented with the gold medal of the city—its highest award. Commander Byrd was made an officer of the Legion of Honor of France.

During the six days they were in Paris, the airmen were welcomed by the Chamber of Deputies and were given a reception by the Paris chapter of the National Aeronautic Association, where they received medals from the hands of Marshal Foch.

At Dunkirk they were present at a ceremony in the Town Hall which made Commander Byrd a freeman of the city and conferred upon him a gold medal. His companions received silver medals. Calais, likewise, made the leader of the expedition an honorary citizen.

Commander Byrd's nature and polished personality charmed the French people quite as much as Lindbergh's youthful modesty.

Before leaving France, Commander Byrd and Bernt Balchen paid a visit to Ver-sur-Mer, the little fishing village where the monoplane *America* was forced to earth, and said farewell to the kindly inhabitants who so hospitably had cared for them after their informal arrival.

On July 18th, the *Leviathan* was met at quarantine by the tug *Macon*, bearing Floyd Bennett, who flew with Byrd to the North Pole, the chairman of the Mayor's Reception Committee, Colonel Lindbergh, Harry F. Guggenheim, Guiseppe M. Bellanca and other members of the welcoming party.

Landing at the Battery at about noon, the flyers paraded up Broadway at the head of six thousand marchers. At City Hall, where they arrived amid a heavy downpour of rain and the customary shower of confetti from the tall office buildings, they were received by Mayor Walker who presented all five—Byrd, Chamberlin, Acosta, Noville and Balchen—with citations and the city's Medal of Valor.

Commander Byrd, who a little over a year ago received the city's official welcome upon his return from flying to the North Pole, thanked the New York press and public for supporting the transatlantic flights in the interest of aviation.

That afternoon Chamberlin journeyed to his home town Teterboro, New Jersey, which wildly acclaimed him.

From the New York City Hall the Byrd procession motored uptown to take part in ceremonies at the Pillar of Eternal Light in Madison Square. Here the flyers were presented with the Freedom of the State by William H. Woodin, representing Governor Smith. In the evening the party, including Chamberlin, attended the theater.

On Tuesday evening, the flyers were guests of the city at a banquet in the Hotel Commodore where Byrd and Noville received the Distinguished Flying Cross from Secretary of the Navy Curtis D. Wilbur, who acted as the representative of President Coolidge. The Secretary explained that the regulations of the service made it impossible to bestow this Cross upon civilians and expressed the conviction that Congress would later take action to honor Chamberlin and the other flyers in some proper manner.

Acme, P. & A., Underwood.

Commander Byrd and his crew receive the homage of Paris and New York.

Byrd and companions at Napoleon's Tomb, Paris (top left); Noville, Byrd, Chamberlin, Balchen and Acosta, on board the Macon (below); Welcomed to New York by Mayor Walker (top right); Clifford Harmon, pres., International League of Aviators; Louis Bleriot, Comdr. Byrd, Sheldon Whitehouse, Acting Charge d'Affaires of the American Embassy, in Paris.

Underwood.

Comdr. Byrd telling his experiences to Floyd Bennett, polar flight pilot.

On Wednesday they were given a luncheon at the Hotel Astor by the Merchants' Association. In the evening Commander Byrd and his party attended a reception at the Long Island home of Mr. R. W. Daniel, while Chamberlin was the guest of the German Club.

Chamberlin's laconic descriptions of his transatlantic flight, given during various civic observances, were distinguished for their grim humor. Once, for instance, he said, "The first fifteen or sixteen hours most anyone can fly; and the next fifteen or twenty all you do is look down at the water and realize it is just as far back as it is ahead."

Speaking of his experiences in Germany, Chamberlin said, "Not only the city officials but the entire government went out of their way in every way imaginable to do everything possible for us. The minister in charge of railways immediately furnished all our party with passes to go any place we wanted in the country at the government's expense. The Lufthansa, the great commercial flying organization of Germany, turned over to us all the planes we wanted. All we had to do was to telephone for an airplane, either to take us somewhere or to come and get us."

The State of Iowa, Chamberlin's native state, will confer upon him a lieutenant-colonelcy in the Iowa National Guard in recognition of his record-breaking flight.

The formal program of New York City was concluded on July 21st with a luncheon at the Advertising Club.

Commander Byrd announced that he hopes to start for the South Polar regions this fall. He will be accompanied by Floyd Bennett, Noville, Acosta and Balchen. The Commander invited Mayor Walker to accompany him on this Antarctic expedition, but thus far has received no acceptance.

Incidentally, the Commander approved a suggestion that Governor's Island should be made into an airport. This would be especially convenient for air mail deliveries from important ocean liners. The planes could take off from the ships themselves, Byrd declared, five hundred or a thousand miles at sea, employing catapults such as now are used in the Navy. In discussing transatlantic flying, which he said would come within the next ten years, Commander Byrd voiced the opinion that: "It will be in planes similar to the *America* but much larger, I believe. They will have twice our wing spread—about 140 feet; twice our engine power—we had 640 horsepower; sleeping accommodations for the crew, wheels that will fold under to keep down wind resistance and a powerful radio set capable of sending and receiving over 1500 miles."

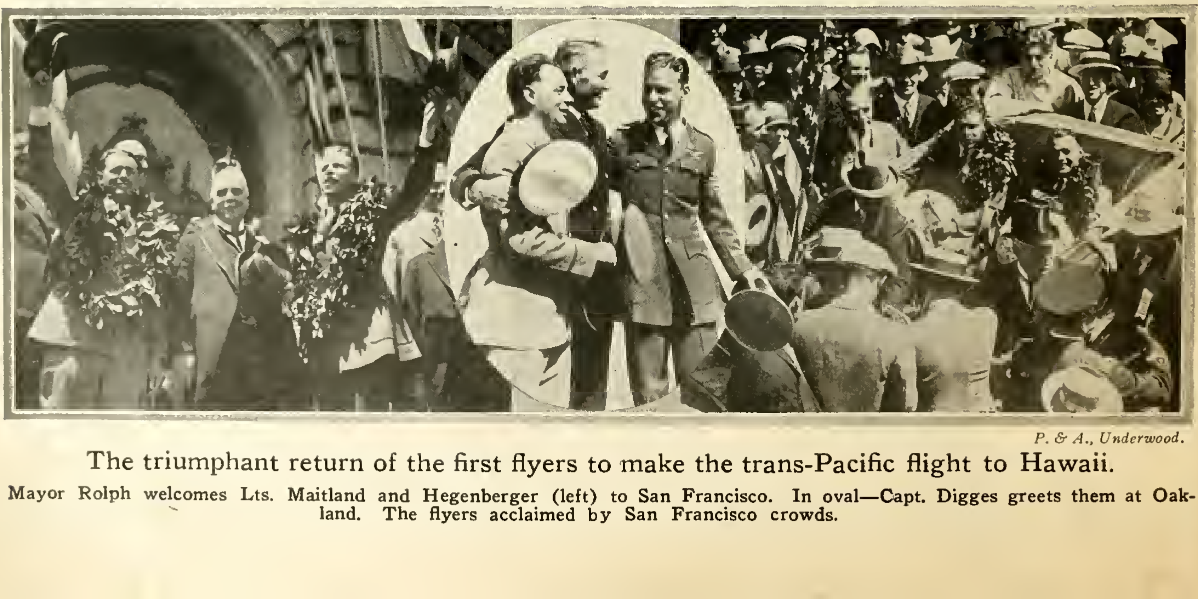
P. & A. Photo.

Byrd and Noville turning over the mail to Consul Wiley, at Ver-sur-Mer.

From New York, the group of flyers, including Chamberlin, went to Boston for a two-day reception. There they met Colonel Lindbergh, who is flying over the country under the auspices of the Guggenheim Foundation, and Lieutenants Lester Maitland and Albert Hegenberger, who made the first flight from San Francisco to Honolulu establishing a new record for over-water flying.

The group of eight outstanding aviators of the hour stirred well-behaved old Boston to its depths. One of the biggest crowds in the history of the city gathered to do honor to the airmen. They were guests at a breakfast given for them at the Hotel Bellevue by Mayor Malcolm E. Nichols and later reviewed the 26th Yankee Division in company with Governor Alvan T. Fuller, Major General Edward L. Logan and other notables.

It was announced that (Continued on page 234)



P. & A., Underwood.

The triumphant return of the first flyers to make the trans-Pacific flight to Hawaii.

Mayor Rolph welcomes Lts. Maitland and Hegenberger (left) to San Francisco. In oval—Capt. Digges greets them at Oakland. The flyers acclaimed by San Francisco crowds.

AIR—HOT AND OTHERWISE

Make Him Assistant Chief!

By Frank A. Tichenor

NATURALLY we, of AERO DIGEST, are more than pleased over General Fechet's promotion to be Chief of the Air Corps. It should make every flyer, every manufacturer and every informed citizen rejoice even if the wirepullers should not be satisfied.

A question of importance rises out of it, however. Who is to succeed Fechet as Assistant Chief of the Army Air Corps? We have been searching the whole field in an endeavor to find in it the one man precisely right for this great job—the man who will fit and fill the place left vacant when Fechet transfers to General Patrick's office, December 13th.

It is mighty important to the success of General "Jim" Fechet's administration that he secures an assistant that deserves and will command the respect of every man in the Air Corps. One that will not be embarrassed by promises made for political backing or the support of those who have something to sell, and above all, one whose record will prove that loyalty to his chief will be assured. Yes, I will admit that it is a large order but it is a large job that is to be filled.

We have surveyed, searched, studied. And then, suddenly, we have discovered the right man with that curious succeeding consciousness that in the very first place we should have seen him at a glance. He is obviously Lieutenant Colonel Benjamin D. Foulois.

Still young, more than vigorous, informed, expert in every branch of the vast work which must be done in the immediate years, he is ideally experienced with nineteen years of air knowledge behind him! In addition he has every other characteristic which could tend to stamp him as the one man in the world for the big job.

Far be it from the thought of AERO DIGEST to propagandize in behalf of any man. We wouldn't wish to do it and Colonel Foulois would be the last to let us do it if we wished and he could stop us. That we failed to think of him at once was our mistake. Probably it is an instance confirmatory of the ancient adage that a prophet is not without honor save in his own country. We had on our distance glasses and Colonel Foulois was close at hand!

Give his record a once-over:

Foulois' presence in the Army is due to a set of circumstances rather like a story in *The Saturday Evening Post*. He is distinguished in the Army now because he wished to be distinguished in the Navy.

He came here to New York a country boy from Washington, Connecticut. Having a bicycle and little money he rode the bicycle instead of traveling by train. Reaching the big town he immediately boarded the old receiving ship named *Vermont*, leaving his bicycle upon the dock.

He was much impressed when his feet were on the gangplank and even more so when they touched the actual deck and a blear-eyed petty officer, with a nose which sometime had been bashed, looked at him with eyes not too delighted gleaming fiercely above a mouth of which one corner was below where it could properly be looked for. This sinister person asked the ambitious youth if he could box the compass or heave a lead. He did not ask him if he knew how to splice the main brace. Foulois could not box the compass and admitted it. So it was crudely pointed out to him that the *Vermont's* was a two-way gangplank and he therefore left the ship.

Bitterly disappointed, his hopes gone of sailing on a gallant man o'war, he walked along West Street and then South trying without the least success to get a job in the merchant marine.

He did not give up hope. But as he had to eat by day and sleep by night, he did give up the bicycle. By the time when so to speak he had eaten one wheel and most of the frame, he began to be less fussy about what service he should go into and even glimpsed with interest the posters in front of an Army recruiting station.

This was in March, 1898, just before the Spanish-American War and the Engineers, that fine branch of our military service, already knew that they would need more men.

Foulois had to join something or go back to Washington, Connecticut, and without any bicycle to go on, so, when he saw another poster, he climbed a flight of stairs and presently was a private in the Engineers Corps of the 19th Infantry. The Lord was good to everyone, you see, that day, as ever, for it was a fine service that the youth had joined and that fine service had acquired a most unusual recruit.

So now we can forget the bicycle, Benjamin Foulois didn't need it any more. He had a job, and as for the Services? Well, it was like a football game in which the Navy had lost out, the Army won.

The Spanish war began with its fight against hidalgos and ended with its fight against embalmed beef and yellow fever. All enemies were completely licked—and Benjamin Foulois had become a seasoned soldier very quickly. He had not only stepped into an Army, he had stepped into a war, and almost at the very instance that this war was won, he was made a sergeant in the 1st U. S. Volunteer Engineers, July 7, 1898. San Juan Hill, you may recall, had then very recently become the property of Colonel Roosevelt, the Rough Riders and certain notable associates, among them Uncle Sam and all his Army, including the brave engineers.

Three years later Benjamin Foulois was made a second lieutenant of Infantry, which is going some for a mere enlisted man, from Washington, Connecticut, who has eaten up his bicycle; and in 1908 he was a first lieutenant in the Signal Corps.

During his four years of this, he achieved an interest in aviation—because Foulois has always been a man of rare intelligence. July 23rd of the first World's War year (1914) he became a captain in the Aviation Section of the Signal Corps. Three years later, when he had joined the Allies, June 27th, 1917, he had been made a major of the same distinguished service.

He was made a temporary brigadier general, in the emergency of war, in September, 1917, and, the war over, stepped back to his lieutenant colonel's rank, now in the Air Corps, because of his great intelligence in aviation, February 1st, 1923.

Bicycles are a great diet for aspiring youths!

Some details:

This man had a wide experience in the Army, before aviation was more than a dream. He served in Porto Rico back in 1898 and then went to the Philippines where he had the luck to get a whack at almost everything.

He saw active service against the Panay, the Zebu and the Lake Lanao Moros before the middle of 1902. He was one of four officers to do the major portion of the mapping in the Rio Grande

(*Continued on page 235*)

P. & A. Photos.

SMITH-BRONTE HAWAIIAN FLIGHT

ANOTHER great air achievement was added to the glorious year 1927 when Ernest L. Smith and Emory B. Bronte made the first civilian flight from the mainland of the United States to the Hawaiian Islands.

In their Wright Whirlwind engined Travel Air monoplane, the *City of Oakland*, Smith, the pilot, and Bronte, the navigator, hopped off from the municipal airport at Oakland, California, at 10:40 a. m., Pacific time, 2:40 p. m., New York Daylight Saving time, July 14th, after having been delayed three hours by fog and a false start which nearly wrecked the plane.

Lieutenants Lester J. Maitland and Albert Hegenberger, the army flyers who made the first hop to Hawaii a few weeks before, came to the field before the hop off to give them pointers on the flying conditions liable to be met and bid them Godspeed.

On June 28th, when the army flyers left Oakland airport for Honolulu, Smith started out two hours after their take-off on his first attempt to make a non-stop flight to the Hawaiian Islands, but was forced to return because of a broken windshield, after flying only a short distance Since then the Travel Air plane was overhauled and new navigation instruments and a radio set with a reception radius of 1200 miles and a daylight sending radius of 300 to 400 miles, suitable to receive the radio beacon signals established by the army for the Maitland and Hegenberger flight, were installed.

The plane left the runway about 4000 feet from the starting point on its second attempt that morning to take off. On their first attempt at 10:04 a. m. the monoplane hit a rut, skidded from the runway and was stopped by the pilot for fear of crashing into the crowd of spectators. A great cheer went up as the plane rose and rapidly disappeared in the fog. In a few minutes the plane returned over the field and circled over the bay to gain sufficient altitude to rise above the heavy fog.

At 11:05 a. m., the *City of Oakland*, escorted by five planes, passed the Golden Gate flying at a speed of 85 miles per hour.

Bronte sent out hourly messages on his small radio set. Shortly after the start they picked up the army's radio beacon, but their receiving set failed soon after.

The steamship *Manoa*, about 450 miles off San Francisco, reported hearing the plane's signals at 3:40 p. m. Land radio stations received messages regularly from the plane until 7:15 p. m. Thursday, when the plane was 725 miles out of San Francisco.

They were not heard from again until 1:05 a. m. Friday, July 15th, when the steamship *La Purisma,* about 1275 miles off California, reported having heard faint radio signals from the plane. Later the army transport *Kenowis* and the steamer *Wahuwa* heard the plane's radio signals.

At 6:13 a. m. ship and shore stations received an S O S call saying they had only one hour's gasoline supply and were 700 miles from the nearest land. Shortly afterwards another S O S correcting this report stated that there was fuel enough for four hours more but called for help. At 6:20 a. m. the *Wilhelmina,* 200 miles from the plane, turned off her course and rushed to aid the plane, which they

P. & A. Photos.

The "City of Oakland" flying over the business district of San Francisco.

estimated was 500 miles northeast of Paia, Island of Maui. The *Kenowis* and the liner *President Pierce* also went to help the flyers.

The last frantic messages said to send help as they were going to land in the sea. Preparations were rushed at Wheeler Field, Honolulu, to send out the Fokker plane, used by Lieutenants Maitland and Hegenberger on their recent flight to Hawaii, but it was considered useless to start until a definite position of the plane was reported by the ships.

Four and a half hours of silence which followed the S O S call led to the belief that the plane had landed on the water and that the radio had been put out of order, preventing sending any message.

Enroute to Hawaii.

However, fear was changed to joy when word was received at Honolulu that Smith and Bronte had landed on the Island of Molokai, a leper colony 60 miles southeast of Honolulu, at 9:46 a. m., July 15th, Honolulu time.

Their plane was in the air 25 hours and 36 minutes, and had traveled 2340 miles, beating the time of Lieutenants Maitland and Hegenberger by 14 minutes, but their distance covered was less than that covered by the army flyers.

The plane was virtually demolished when, with every drop of gasoline gone, Smith brought it down between two kaiwe, or breadfruit, trees on Molokai. The first man who greeted them on Molokai was Judge Edward McCorrison, of Kaunakakai, United Press correspondent and Magistrate of the island. He wired the United Press office at Honolulu, and took Smith and Bronte to his home. Smith wired Captain Lowell Smith of round-the-world flight fame and now stationed at Wheeler Field, Honolulu, and asked him what they should do next. As Captain Smith was absent when their message arrived, it lay unread for nearly two hours.

When the news became known, army planes left immediately to take Smith and Bronte from the leper island to Honolulu. They arrived at Wheeler Field at 3:57 p. m., Honolulu time. Guns roared a salute and thousands of spectators cheered as the flyers stepped from the army plane. Major Henry Miller, commandant of the field, Governor Farrington and other notables received them and the joyous populace bedecked them with leis. Smith presented an American flag from the Oakland Chamber of Commerce to representatives of the Honolulu Chamber of Commerce.

P. & A. Photos.

Emory B. Bronte and Ernest L. Smith.

Captain Smith took charge of the flyers and escorted them to the Royal Hawaiian Hotel. Refreshed by a light meal, their first food since leaving Oakland, the flyers refused to go to sleep and asked to go for an automobile ride, so Captain Smith took them for an evening drive around the island.

Smith and Bronte said that the reason their radio was silent after sending out the S O S and why they continued on to land without informing the rescue ships that they were still in the air, was due to the temporary failure of their gasoline pump, when about 500 miles from land, leading them to believe their fuel supply was nearly exhausted. Then the power gasoline pump refused to work and the plane lost so much altitude that their trailing antenna struck the sea and was torn away.

The gasoline pump resumed its functioning and they shot up into the air again and headed for land without knowing how long they would last, without knowing whether their calls had been heard and uncertain of their bearings.

Bronte tried to fix the radio but could not. Before landing in the kaiwe trees, they released the last two pigeons bearing notes giving their position. The first two pigeons were released 300 miles from San Francisco, but the birds failed to arrive, no doubt due to the thickness of the fog.

"We ran into the fog early," said Smith. "We flew at an elevation of from 3600 to 4000 feet, once up to 11,000 feet.

"Fog hung under us all the way and we never saw the ocean until near our destination.

"Once we started to land on some farms formed by mirages caused by the moon on a fog bank, but discovered our mistake in time not to hit the water.

"We saw first the tall peak of Mauna Loa on the Island of Hawaii. We then headed for Oahu, but our fuel gave out at Molokai, only a few miles from the finish. We hated to smash our good old plane, but it had to be done.

"The radio beacon worked for the first 180 miles, but our receiving set caused trouble. I believe the radio beacon will be a big success when fully developed. Our flight convinced me of its feasibility in long distance air traveling."

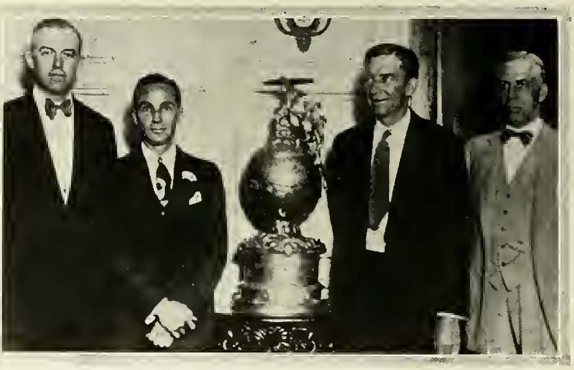
Ernest L. Smith, who is thirty-four years old, was born in Reno, Nevada. He attended the University of California and served in the army during the World War. He is a pilot for the Pacific Air Transport Company and has been in their employ since the service was

(Continued on page 234)

THE 1927 NATIONAL AIR TOUR

By Ralph W. Cram

As the last of the 13 planes left in the National Air Tour touched its wheels on the Ford Airport at Dearborn the afternoon of July 12, the 1927 Tour came to a satisfactory close. It finished in a wind, rain and electrical storm which tested the skill of the pilots and the worthiness of their aircraft on the last leg of the cruise, but every ship came in on time to a safe landing. Fifteen planes, counting two escorts, had carried half a hundred people about 4,300 miles, not a person and hardly a ship had been scratched, and the comparative safety of air travel had been demonstrated in this country as never before.



Eddie Stinson winner of the 1927 National Air Tour.

Left to right: Wm. P. MacCracken, Asst. Secy. for Aeronautics of the Dept. of Commerce, Edsel B. Ford, donor of the trophy, the Ford Reliability Trophy, Eddie Stinson, and Frederick J. Haynes, pres. of the Detroit Board of Commerce—just before the dinner given for the Tour pilots.

One plane, the one with the lowest-powered engine and that now new at the start, had dropped out at Oklahoma City, the pilot's home town, after a sporting drive of 3,000 miles, competing with high-powered busses. All other planes that started were in at the finish.

Signs of Progress

At the start, there was a tendency to compare this Tour with the two previous ones, and to be well satisfied. True, there were not so many starters as in 1925, when 17 got away and 15 finished; nor as last year, when 25 started and 18 finished. But the two year advance shown by the character, quality and power of the planes starting this year was amazing.

The first year the Fokker was the only big cabin plane, and the only ship with Whirlwind motors. There were some other Wrights and E-4's, but the OX5 was most numerous. Last year there were only seven OX5's to six Whirlwinds, and the cabin jobs had increased to three. This time there was only one OX5; there were 13 Whirlwinds, and nearly as many cabin planes as open cockpits.

All but the OX5 did better than 100 miles an hour on the speed test, the Whirlwind Eaglerock being good for over 130. Almost all had brakes, which appeared on six last year, and loads ran up to 1,500 pounds for the Stinson monoplane and more for the tri-motor Ford.

The Converted Public

This looked good. But before the Tour was one-quarter over, something developed that was even more significant. This was the changed attitude of the public toward flying.

It isn't so very long since the individual who went aloft in an airplane was regarded by his neighbors and his family as reckless, to put it mildly. For two members of a family to "go up" at once was regarded as almost criminal. But here was the 1927 Tour starting with one whole family, father, mother and daughter, in one plane, a bride and groom in another (please don't look so bored, Mrs. Hawks), groups of business men in others, booked for the whole Tour, and two prominent government officials, Assistant Secretaries MacCracken and Warner, traveling with us for a time.

The Ladies!

Nor is that half of it. Seats were vacated from time to time, as busy business men returned to their desks and offices, and their places were taken by the ladies (God bless 'em). And they surely do like to fly. By the time the Tour finished, there were a dozen ladies in the party.

Tourists invited their lady friends, along the way, to join them. Ladies prominent in entertaining the party were invited to come along, and never refused. Wives of pilots appeared, here and there, and joined their husbands. Bandboxes leaned against gladstones in the luggage pile. There was demand for curling irons and flesh colored face powder and other essentials of feminine pulchritude, at each control; and had the Tour lasted another 4,000 miles, apparently the only men left would have been the pilots. As it was, at the finish we were prepared to support the proposition that the Tour was the greatest traveling beauty show that ever hit the high spots of the country via the air route. Doubtless it will start the fashion of air touring among American women. (Continued on page 134)

Pilots and their passengers at the start of the National Air Tour at Ford Airport, Dearborn, Michigan.

The winning Stinson-Detroiter Monoplane. Carrying seven passengers and a total useful load of 2,275 pounds this plane made an official high speed of 124.3 miles per hour and averaged 113.4 miles per hour over a 4,166 mile course.

Again the
Stinson-Detroiter
Leads

CARRYING a useful load of 2,275 pounds and a contest load of 1,500 pounds, a stock seven passenger Stinson-Detroiter monoplane won the 4,166 mile National Air Tour and the Edsel B. Ford Trophy with a lead of 2,000 points over the plane which finished in second place.

Never before has an airplane carried a load totaling 275 pounds more than the weight of the airplane itself, into and out of all types of landing fields over a 4,166 mile course.

And as a further demonstration of the reliability and efficiency of Stinson-Detroiter planes a stock Detroiter biplane won fifth prize money in the National Air Tour. This plane had been flown 350 hours without motor overhaul prior to the Tour.

In competition with the best commercial planes Stinson-Detroiters have decisively demonstrated their superiority.

Let us tell you how the Detroiter can solve your problem, be it air mail, aerial taxi service, business, pleasure, photographic work or training.

Stinson Aircraft Corporation Detroit, Michigan

Factory, Northville, Michigan

SCORES OF THE 1927 NATIONAL AIR TOUR

Stinson-Detroiter monoplane, "Miss Wayco," No. 24, Eddie Stinson, pilot, 9853.7.
Hamilton Metalplane, No. 2, Randolph G. Page, pilot, 7863.5.
Mercury, No. 7, Harvey C. Mummert, pilot, 7807.
Ford Transport, No. 23, Dean W. Buford, pilot, 7609.
Waco-10, No. 11, John P. Wood, pilot, 6857.
Stinson-Detroiter biplane, No. 13, Leonard S. Flo, pilot, 6386.
Waco-10, No. 12, John Paul Riddle, pilot, 5785.5.
Ryan, No. 22, Frank M. Hawks, pilot, 5588.
Waco-10, No. 10, Chas W. Meyers, pilot, 6323.
Buhl Airsedan, No. 1, Louis G. Meister, pilot, 5375
Pitcairn Mailwing, No. 6, H. A. Elliott, 4656.3.
Waco-10, No. 8, E. W. Cleveland, pilot, 3725.

MULTIPLYING AIRPORTS

When Mr. Edsel B. Ford offered the trophy to be competed for in these annual reliability tours the purpose was stated to be "to demonstrate the reliability of travel by air on a predetermined schedule regardless of intermediate ground facilities." All three Tours have helped demonstrate this; this last one found the public converted to the idea; and incidentally the last Tour found both intermediate and terminal landing facilities greatly improved. One of the important results of the Tours had been their stimulus to the movement to establish adequate airports at most of the cities visited, and many others.

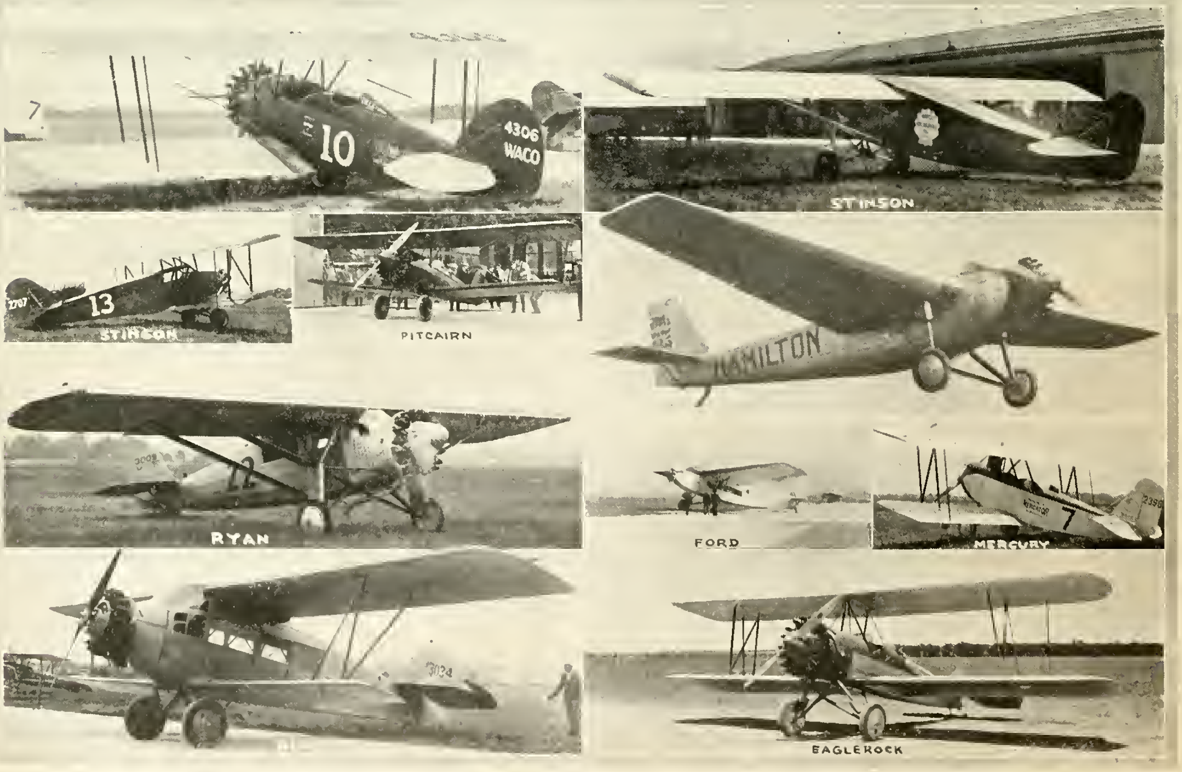
On this Tour, for instance, Buffalo offered a 500-acre municipal field for the first stop. Geneva has a new field, rough and hard, of good dimensions on paper, and will now make a good airport of it. Boston is wonderful in its clear approaches, but needs more land and will provide it. Curtiss Field was used on Long Island, and the Long Island fields will do till the metropolis can have a field nearer Forty-second Street and Fifth Avenue. The Pitcairns furnished a good one at Philadelphia.

Baltimore told us of the recent adoption of a $1,500,000 bond issue for a new municipal field. Cleveland has a big municipal and air mail field. Kalamazoo has put $100,000 into a fine field, on paving, three miles from the postoffice. Dayton will soon own McCook.

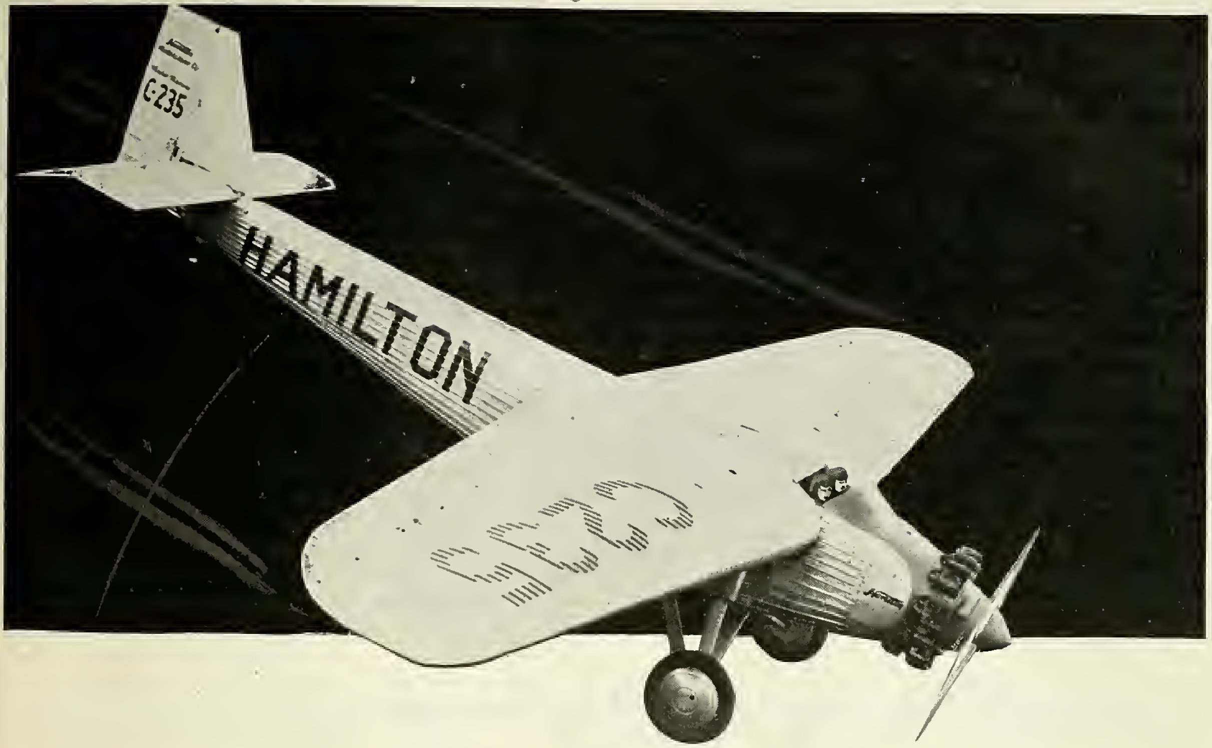
Columbus has a good field, Cincinnati has big plans for claiming its place on the air lines, the Louisville field is fine, Pine Bluff had Senator Robinson of Arkansas there to help dedicate its new airport, Dallas had just bought Love field, Omaha dedicated its new municipal field at the Tour's stop. Moline has one of the best airports and all three Tours have stopped there, and all around the circle there was lively interest in the securing of adequate fields.

THE PANORAMA OF AIR TRAVEL

It was a wonderful panorama that passed underneath the planes on this year's tour. Crossing the Ontario flats, on the northern border of Lake Erie, they were next over the pleasant New York landscape, then in the foggy Berkshires, looking down next on the forested mountains and thin-soiled farms of the Eastern rough country, the mining country of Pennsylvania, and the farms and erstwhile oil lands of Ohio. Across the blue grass region of Kentucky to the lands about Memphis, recently emerged from beneath the floods. Timberlands galore, then the rice fields that have made Arkansas the third state in rice production. The cotton fields of the south were succeeded by the oil fields of Oklahoma, then miles of open range, and miles



Typical commercial planes which competed in the 1927 National Air Tour. Ten widely different types of planes are shown—monoplanes and biplanes, open cockpit and enclosed models sharing equal popularity.



PERFORMANCE
the greatest of all proofs!

HAMILTON METALPLANE SPECIFICATIONS

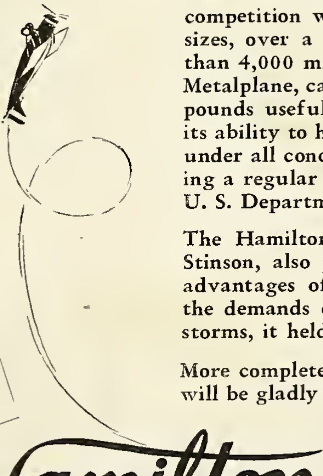
TYPE—CABIN MONOPLANE, COMMERCIAL TRANSPORT
Length overall .... 31' 5"
Height overall .... 8' 0"
Span overall .... 48' 0"
Crew and passengers, number .... Six
Power plant.... Wright Whirlwind J5

WING DATA
Curve.... N.A.C.A. .... 81J Modified
Span .... 48' 0"
Area (square feet) 300
Aspect ratio 7.3

WEIGHTS
Weight empty 1860
Useful load 2000
Gross weight 3860

SAFETY FACTORS
The following safety factors are all higher than required by the Department of Commerce:
Wing structure (high incidence) 8¼
Wing structure (low incidence). 5¼
Wing fittings 15
Wing bolts 20
Landing gear fittings........ 15
Landing gear bolts........ 20
All other factors conform to those specified by the Department of Commerce for class 2 airplanes.

PERFORMANCE
Maximum speed with normal load .... 120 M.P.H.
Landing speed .... 50 M.P.H.



THE actual performance record of the Hamilton Metalplane in the recent National Air Tour is a most convincing proof of its worthiness. In competition with fourteen planes of various types and sizes, over a period of two weeks, and covering more than 4,000 miles in all kinds of weather, the Hamilton Metalplane, carrying 1,375 pounds pay load (over 2,100 pounds useful load) won second place—demonstrating its ability to hold consistently to a schedule and operate under all conditions. It was the only ship on tour having a regular certificate of air worthiness issued by the U. S. Department of Commerce.

The Hamilton Metalplane, in placing second only to Stinson, also proved by actual performance the many advantages of all-metal construction in withstanding the demands of hard usage. Through wind, rain and storms, it held its place among the leaders.

More complete information on the Hamilton Metalplane will be gladly sent upon request.

Hamilton

HAMILTON METALPLANE COMPANY
MILWAUKEE, WISCONSIN

of wheat fields in Kansas. North to Omaha and the corn belt, the planes swung east to the Michigan peach orchards and fox farms, and back to the starting line amid the smokestacks of Detroit. From the passenger's viewpoint, it was a wonderful circuit.

SOME STORM!

Except for that foggy day in the Berkshires, the Tour was almost without incident for a fortnight. It went along on the dead level of air transport, just plain travel sans adventure. Then on the last day the smile of the weather gods changed to a frown. They put all their fury into one package, and threw it at the Tour. It had all been too easy, and putting a real storm in the way of the pilots restored the average. They gave the Tourists plenty of rain, wind and electricity.

It was distressing, from our plane, to see the buildings burning on two farms almost beneath us, set afire by the lightning which, in long, jagged, fiery darts, was connecting earth and sky each passing minute. At both places the farm folks were standing helplessly by while their possessions went up in flames. As the Tourists passed on they gave credit to good pilots and good ships for the fact that they seemed in more safety than these folks on the ground. Take the word of the waiting throng in Detroit, they recognized the skillful handling of the planes, that afternoon, that brought everyone out of the storm into the home airport. The Tour was demonstrating to its close the safety of air travel.

SIDELIGHTS ON THE TOUR

All around the circuit, the big Ford transport and Ford-Navy plane, the unique Hamilton all-metal monoplane, the Ryan Gold-Bug, attracted the biggest crowds, although the smaller planes got their share.

Little Rosemarie Schlee was the pet of the trip, the recipient of bouquets, and the distributor of sunshine.

Then there was "Whirlwind Jimmie," the monkey that someone gave to Pilot Charles W. Meyers, and which became the trip mascot. Of course, Meyers did the piloting and was heroically assisted by his companion as second hostler to the monk.

Tour Manager Ray Cooper qualified as general passenger agent as well as tour executive; the constant excess of volunteer passengers multiplying his duties. When he wants to, he can run a railroad.

Even the flapper stowaway was on hand, and Manager Cooper more than once had to seek an introduction to fair passengers and find out where they came from and whither they were going.

(Continued on page 230)

All Tour photos courtesy Charles Planck.

The personal element on the Tour—some of the prominent pilots and passengers.

(1) E. W. Cleveland; (2) Paul R. Braniff; (3) Harvey Mummert; (4) Ray Collins, Tour Referee; (5) Lt. J. G. Breene; (6) Thomas Hamilton; (7) Randolph Page; (8) Louis Meister; (9) Mr. and Mrs. John Paul Riddle and Harry Sherwin; (Center) Charles Planck of the Detroit Free Press, Wm. A. Mara Mrs. Edward Schlee, Henry Desenberg, Rosemarie Schlee, Eddie Stinson and Edward Schlee; (11) Mr. and Mrs. Frank M. Hawks; (12) E. A. Goff, Leonard Flo, Gene Searles and Ray Cooper; (13) C. P. Clevenger; (14) C. W. Meyers; (15) John P. Wood, G. Turner, and B. Wright.

BERRYLOID

The Supreme Lacquer Finish for Motor Cars and Airplanes

"Save the surface and you save all"

92%

of all the planes in the National Air Tour are protected with....

Berry Brothers' Finishes

How the Planes are Finished

Buhl Air-Sedan	*Berryloid and Lionoil*
Alexander Eaglerock	*Berryloid and Lionoil (two planes)*
Hurd Monoplane	*Berryloid and Lionoil*
Pitcairn PA-5	*Berryloid*
Aerial Service, Mercury MW-3	*Berryloid*
Cleveland Pneumatic, Waco-10	*Berryloid*
Advance Aircraft, Waco-10	*Berryloid (four planes)*
Stinson-Detroiter	*Berryloid and Lionoil (two planes)*
National Airways, Air-King-27	*Berryloid and Lionoil*
American Eagle—1927	*Berryloid*
Kreider-Reisner, Challenger	*Berryloid and Lionoil*
Curtis-Wright Sportster	*Berryloid and Lionoil*
Curtis-Wright Air Coach	*Berryloid and Lionoil*
Hess Blue Bird—H-2	*Berryloid*
Ryan Brougham	*Berryloid*
Ford-Stout All-Metal Plane	*Lionoil Prussian Blue*
Stinson-Detroiter Monoplane	*Berryloid and Lionoil*

All but two of the 24 planes entered in the third annual National Air Tour for the Edsel Ford reliability trophy were protected with Berry Brothers' Progressive Aircraft Finishes.

Ninety-five percent of America's commercial airplane builders now use Aircraft Berryloid, Lionoil and other of Berry Brothers' wear-resisting finishes.

Guesswork has no standing in the aeronautical industry. Knowledge of materials is as essential as engineering prowess. This explains the almost unanimous preference exhibited for finishes made by Berry Brothers.

—the Stinson Monoplane, winner of the National Air Tour, was protected exclusively with Berry Brothers Progressive Aircraft Finishes.

On the Wings *of* Progress

BERRY BROTHERS

Progressive Aircraft Finishes

Detroit, Mich. - - - - Walkerville, Ont.

Member Aeronautical Chamber of Commerce

"LOCAL FOR EUROPE—BERMUDA FIRST STOP!"

By James Albert Wales

At the New York City Hall, on June 13, Colonel Lindbergh prophesied: "We will have transatlantic service eventually; it is inevitable, but it will be after careful development and experimental research. We should have it probably within five or ten years."

So it won't be long now, before we have express and local air service to Europe!

Giuseppe Bellanca thinks the transatlantic route will be via Newfoundland and the Azores.

Of course there can be more than one route.

And Forecaster James H. Scarr pointed out, a few days before Lindbergh hopped off, that the weather on the northern route is clear all the way across the ocean during hardly one day in fifty. He said that "if a practicable airplane route is ever established, it will be via Bermuda and the Azores, where the weather is clear most of the year around."

© P. Dowle and Co.

Sea gardens and coral reefs of Bermuda as revealed from the air.

All right, it seems we're likely to go via the equable southern route, at the beginning anyway, and now where and what is Bermuda?

It is a British colony in the Western Atlantic, a group of one hundred and fifty islands, of which only three are at all large, situated almost due southeast from New York, and about six hundred miles away from any other land. It isn't in the West Indies, as many imagine. Lindbergh and Chamberlin are sending us all back to our geographies!

First stop for east-bound European locals will be Bermuda, 666 nautical miles from Sandy Hook.

At first, all planes will stop at Bermuda and the Azores, and perhaps at some floating mid-ocean station between them. Later the European expresses on their non-stop flights will merely pass over or near enough to these stations to be able to use them if emergency requires.

Upon reaching Bermuda we can straighten out our course easterly to the Azores and Spain. (And Spain, by the way, bids fair to become an aerial gateway to Europe.)

© P. Dowle and Co.

Ely's Harbor, washing cedar-clad islands beribboned with white coral roads.

Let us find out something about this mid-ocean airport. Even if transatlantic service doesn't start at once, it is certain that many aviators are going to try the 666-mile hop from New York or the 568 nautical miles from South Carolina. It is the shortest and easiest transoceanic flight from our mainland to a foreign country. There are plenty of boats to pick one up. The map shows that Bermuda is the hub of many international shipping routes.

Two powerful lighthouses, on Gibbs Hill and St. David's Island, will be supplemented eventually with beacon lights. There are as yet no completely equipped landing fields in the Colony, but it is believed that for the present all visiting airmen will use seaplanes or amphibians, and will alight on their pontoons in the numerous sounds and bays. The *Los Angeles*, during her stay in Bermuda last year, moored to the *Patoka*, near the gigantic British naval establishment at Ireland Island, in the Great Sound, at the west end of Bermuda.

The islands are fascinating no matter how you look at them, and those of us who have seen them from above have found the aerial view the most charming of all. The air tourist will get a thrill from his first view of the cedar-clad isles, a cluster of gems set in an iridescent sea, which constantly changes its hues from opal to turquoise, from indigo to mauve. The water is crystal clear and clean, and from the air one sees the bottom clearly at sixty feet. In every direction the vista is one of breath-taking loveliness —really, we must throttle down and pass over it leisurely!

During a recent Bermuda visit a friend and I flew over the islands, and we were especially enchanted with the view of the sea gardens. Here, among the coral reefs, grow innumerable beautiful and unusual forms of marine vegetation. Bright-colored fish dart in and out among coral ferns, sea-fans, anemones, and other weird plants of Neptune's domain. You realize now why seagulls can detect fish from a height and swoop down unerringly upon their prey.

(*Cont. on p.* 144)

ANOTHER VICTORY!

A Standard Steel Propeller was used on the Stinson Monoplane which won "The 1927 National Air Tour".

Standard Steel Propellers are now specified as standard equipment on a large number of well known commercial airplanes throughout the United States. They are built to withstand the severe conditions of flying at all times and in all kinds of weather.

STANDARD
PITTSBURGH, PA.
STEEL PROPELLER CO.

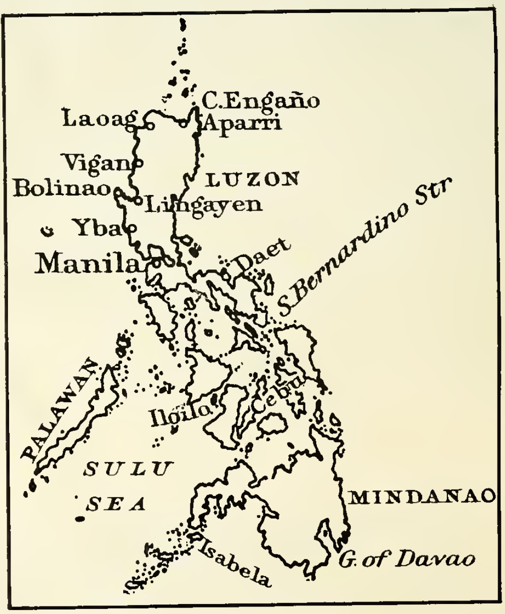
COMMERCIAL AVIATION IN THE PHILIPPINE ISLANDS

By Lieutenant Walter K. Burgess, A. C.

Commanding Clover Field, Santa Monica, California

SUCH a title is somewhat misleading. At the present time commercial aviation in the Philippine Islands is characterized chiefly by its total absence. This does not indicate that this field is barren of immediate opportunities or that it is hedged about by unusual or even great obstacles. The reverse of this would more nearly represent the true conditions. In fact it is believed that if the proper equipment and capital were obtained that there exists no other field of like area with greater immediate and potential returns in sight.

The late President Roosevelt is credited with a statement similar to the following, during his presidential administration, "The age of the Mediterranean is past, the age of the Atlantic is passing, the age of the Pacific is just around the corner." This statement if made to-day would scarcely be up-to-date as with the ending of the World War and the subsequent economical readjustments the age of the Pacific has actually dawned. Present developments in the nations bordering the Asiatic shores of the Pacific are everywhere indicative of a reawakening in those nations of a spirit of national consciousness and a desire and determination on their part to become more active in their own internal administration and in the affairs of the world at large.



Philippine Island group, area 127,814 square miles.

The United States, being the largest nation on the western shore of the Pacific, will naturally come into close commercial and political relations with these Asiatic nations. Our relations in the future with them should continue to be friendly as in the past. In this respect we have the advantage of a tradition of over a century and a half of friendliness towards these Asiatic peoples. This is of no small advantage to any commercial adventure in the Philippines undertaken by Americans. I am fully aware of the period just past in these islands and of the attempts of certain elements therein to discourage and hamper the participation of American and foreign capital in their development, but it is believed that this condition is now changing for the better and further that an enterprise such as an American company engaged in commercial aviation throughout the islands would hasten materially this change.

Many business enterprises in these islands are now handled by Chinese and Chinese capital. It is probable that this will never equal American or British capital there, yet it is believed it will be largely increased. These Chinese commercial activities are more enterprising than the average American would suspect and they are invariably friendly towards such American authority as now exist there.

The Philippine Islands in all probability will remain either under the American flag or on a friendly status and closely related to these United States commercially. Their geographic location renders them in the position of an entry port or door for all Asiatic development. Their own present and potential resources are tremendous and scarcely touched in any way. Their present need of communication and transportation is their greatest handicap. Conditions now are such both economically and politically as to prevent the establishment of large or modern inter-island steamship lines. Ninety-eight per cent of the inter-island traffic is carried on by insular steamship companies owned largely by Spanish or Spanish-Chinese mestizo capitalists.

The Philippine Island group is over one thousand miles from its northernmost to its southernmost extremities and approximately four hundred miles from east to west. The total area is 127,814 square miles, composed of thousands of islands. Ninety per cent of this area, however, is confined to eleven or twelve large islands. It is on these large islands and between them that there is such need for commercial aviation.

During approximately three years' service in these islands, in which period the entire group was covered by seaplane, I was asked on numerous occasions by plantation owners, business men and tourists if there were any possible means whereby transportation by government planes could be arranged to various points in the archipelago. These requests were so numerous and continuous as to cause one to wonder why some enterprising American aviation capital did not take advantage of this condition and enter the field.

The boats of the insular transportation companies are, with one or two exceptions, old in type, small, comparatively unseaworthy and lacking in appointments and sanitation. One or two journeys on the average inter-island boat in even a moderate sea, coupled with the native cookery in the ship's galley, abundantly flavored with garlic and none to fresh fish, would make an air enthusiast out of even the most skeptical.

Tourist travel is steadily on the increase; particularly is this true since many around-the-world tours by American and European steamship companies have been instituted. Practically all of the tourists carried by these lines stop at at least one Philippine port for a short time. During such a stop it is impossible for tourists, without the aid of aviation, to get more than a glimpse of the country. If good commercial planes were available ample business would be afforded in the carrying of tourists alone to such points of interest as Baugio, Los Banos, Mountilban, Poughinsan, Corregidor, the

(Continued on page 144)

ATTENTION!

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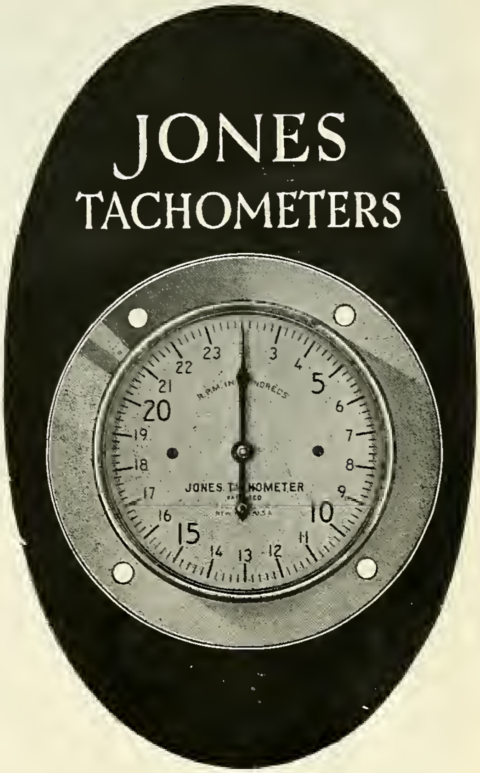

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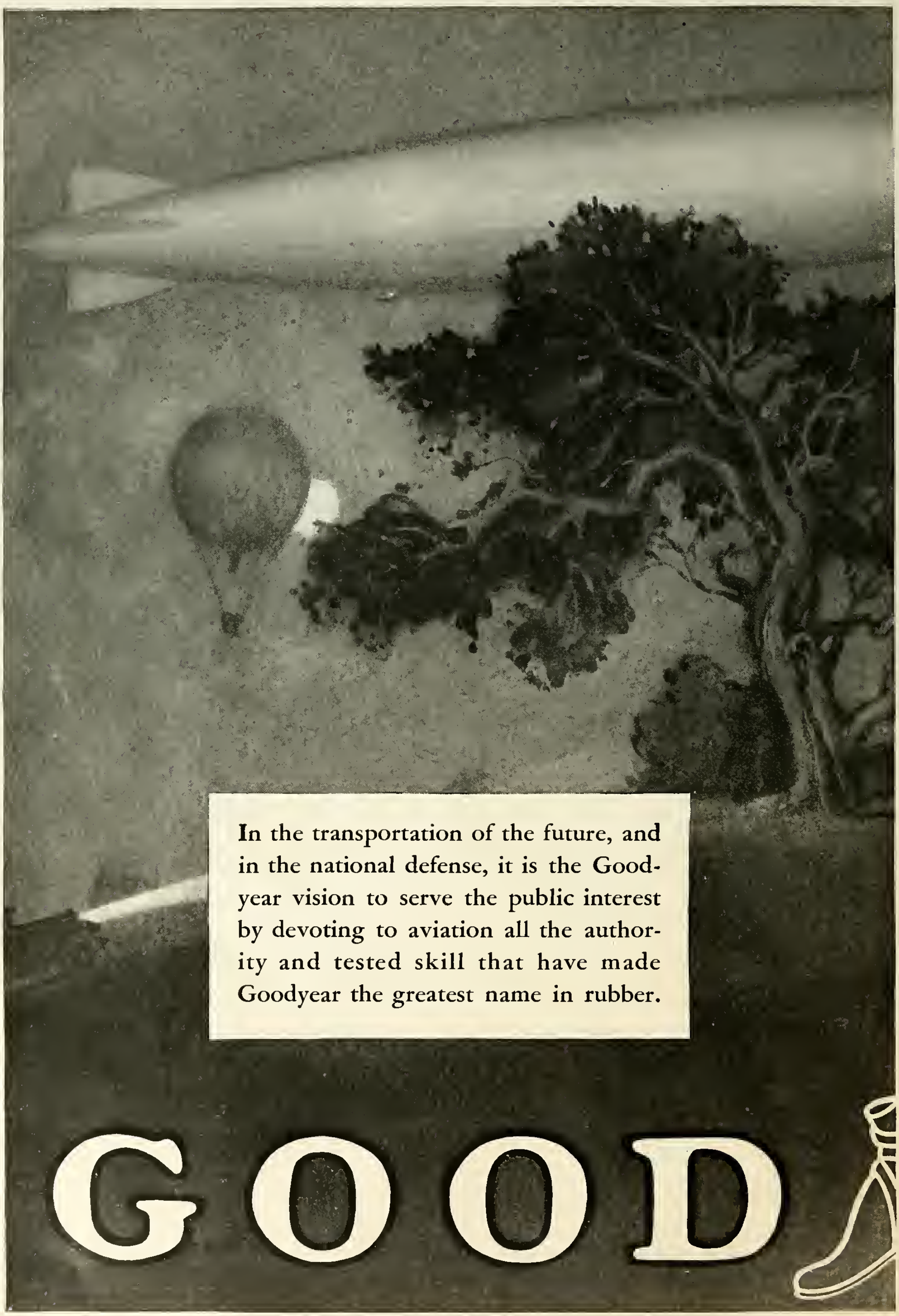

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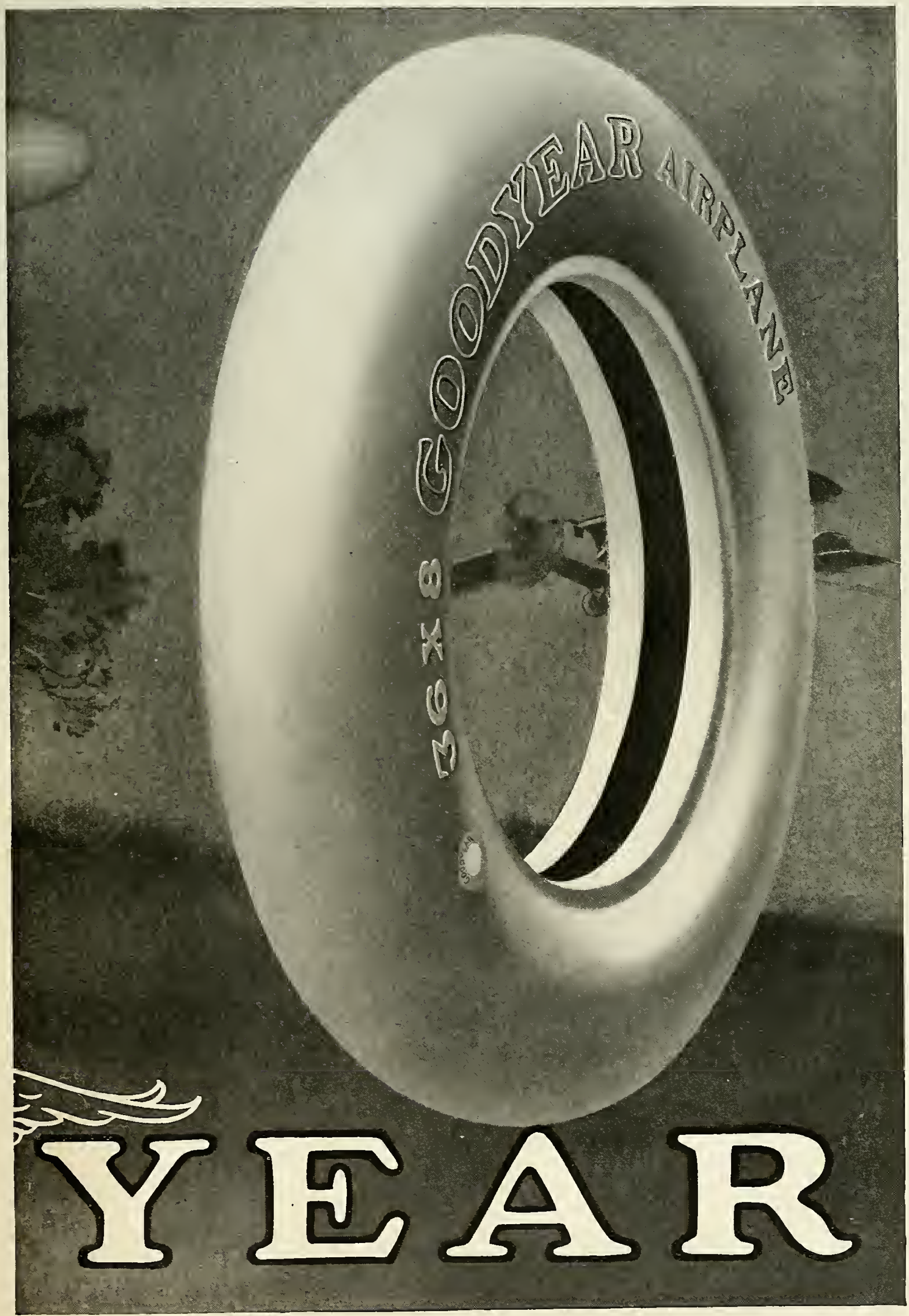

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AVIATION IN THE PHILIPPINES

(*Continued from page 140*)

Cagguian valley, Alongpo, not to mention Iloilo, Cebu, the Moro metropolis of Zamboanga, the Lake Llanao region and Jolo.

Economic conditions in the Philippine archipelago are based on agriculture. Whatever manufacturing is done is that of raw sugar, lumber, hemp, copra and copra oil, dessicated coconut, tobacco and native articles. The agricultural system is dominated largely by the system established in the past by the old Spanish landed estates. American and British capital have built modern villages, with every convenience of sanitation and amusement, on their sugar, hemp and copra centrals. These communities are prosperous and contented and form units of considerable purchasing power.

Officials of these large sugar, hemp, tobacco and copra centrals or haciendas are all potential users of commercial aircraft. As stated before, on numerous occasions requests were received from them for transportation in government planes to and from their various localities not only during the dry season but during the typhoon season as well. Many of the islands are not connected by cable. Boats call only at long intervals and as a result many centrals are as isolated from the outside world as if they were separated by days and weeks of distance. Particularly is this true of the lumber mills and camps. By air their distances are from one to six hours only from Manila and other large seaport towns.

The weather of the Philippine group of islands is divided into two main seasons, a wet and a dry, the former beginning in June and lasting until December, the latter beginning in December and lasting generally until the middle of June. But weather conditions vary greatly depending on the location of a community on an island with reference to the mountain ranges on that island, and the location of that island in the archipelago. During the dry season flying conditions are better than in almost any section of the United States for a similar period of time. During the typhoon season it is often impossible to maintain boat schedules for weeks at a time in certain sections. The average flying weather is not good during this season; nevertheless, most of it is not impossible. I, as well as other members of the service, have made emergency trips during this season when no inter-island boats would venture out of harbor. At such times, providing limited visibility exists, it is believed that transportation by air is as safe or even more so than on the sea on the smaller inter-island craft.

It will be years before economical or political conditions will permit the establishment of shipping lines with larger and more modern steamships; and a good commercial air company could be equipped for less than the cost of the poor equipment of even one of these island steamship lines.

Airplanes for this service should be multi-motored and, if possible, amphibians. The amphibian planes, however, should not be underpowered or contain a high wing loading ratio.

Most of the country is mountainous and densely jungle-covered and the remaining part generally is covered with cogon grass ranging in height from two to eight or ten feet. The land devoted to agriculture represents only a small percentage of the total and of this agricultural portion, with the exception of sugar cane and a few limited tobacco areas, there are few if any landing fields on many islands. The rice lands are broken up into little patties, a few yards or rods in extent, with dikes approximately one foot to eighteen inches in height.

On the other hand, there exist an almost numberless array of bays, estuaries, river mouths and protected strips of coastal waters, many of which even during the typhoon season afford ideally protected and smooth landing areas for sea-aircraft. Many beaches also afford smooth sandy strips where landings could be made provided craft were equipped with wheels with comparatively large tires. Bombers have landed successfully on both beach and sugar and cane areas. On many of the islands during the dry season there are sandy river washes and alluvial plains or fans sufficiently free from large stones to afford safe landing places. By using a plane equipped to take advantage of all these facilities, such as an amphibian, flying in this country would be as safe from the standpoint of adequate landing fields as it is throughout the continental limits of the United States.

Great care should be exercised in choosing equipment well protected from the elements and from the action of salt water. Few varnishes or light electro-plating protection of metal will give long satisfaction in this climate.

At the present time I know of not one single commercial plane there. The insular government has one JN4 type plane used in locust exterminating experiments mostly on the island of Mindora and the southern portion of Luzon. A number of Curtiss H2L and F5L flying boats, owned by the insular government during the war and intended for training the constabulary officers, no longer exist. During the three carnival seasons of 1924, 1925, and 1926 a small Dutch commercial plane was brought up from the Dutch East Indies and flown at Manila for the duration of the carnivals and engaged only in passenger flights. It is understood that the venture was a complete financial success during each carnival season.

However, at the present time it is believed advisable that "passenger hops" should not be contemplated alone but should be carried on in connection with inter-island communication lines as outlined above. There is at the present time ample support for two such lines in Manila, one in Cebu, one in Iloilo and one in Zamboanga.

Airlines would tend further to increase American commercial prestige and would facilitate the development of these islands and their peoples. Airlines would add to the friendly respect of the large native population for Americans and in particular for the American nation of which they are a part and would further tend toward an increasing valuation politically and economically of that relation.

"BERMUDA NEXT STOP!"

(*Continued from page 138*)

At the present time you leave New York in a large and luxurious steamship on Saturday morning and you are in Bermuda early on Monday, within forty-eight hours. There are two or three boats a week, during the greater part of the year, but if you need to get back quickly you will have to wait two or more days. When the airliners stop at Bermuda you can leave New York at two o'clock, after lunch, and land at Hamilton at seven, before dinner.

So, if you are among the many who will prefer the two-day sea voyage in a steamship, it will be a comforting thought to know that if the market breaks or something else happens to summon you home quickly you can get back to New York within a few hours.

Here comes No. 18 now. She is right on the dot, and the natives who set their watches by her are all down at the depot to see the local come in. Next stop, Azores!

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THE AIR FORCE AT SEA

By Major William D. Tipton

Commanding Officer, Air Corps, Maryland National Guard

IT may seem to some presumptuous that one not versed in the naval art should undertake to discuss problems arising in the operation of an air force at sea. One completely disclaims any knowledge of sea conditions. However, from association during the late war with what has been very properly adjudged the finest air force of that time, one feels competent to set down certain observations based on experience with the Royal Air Force, which might be accepted as a standard of the late war and a yardstick to calculate the effect of present tendencies.

Impressions received at that time under the stress of conflict, while not registering at the moment, naturally take form under the mellowing influence of years, and it is with the idea that one's past experience in an air war of five years' forced draught development might illuminate present problems that this is set down.

Of course it may seem incongruous that standards of air war over land should be used in discussing that over the sea, but it is quite evident that since there is no precedent at hand for the use of aviation at sea as it has never been used in actual combat, there is some justification for using these standards in appraising the work done by our own navy in preparation for the use of an air force at sea.

Aside from those technical problems of servicing, landing and launching aircraft at sea there is really but little tactical difference in the realm of fighting, observation and bombardment or torpedo attack. Observation in the army, including reconnaissance and artillery adjustment, differs only in detailed technique from scouting and spotting. Pursuit and fighting are the same under different names. Bombardment tactics of both services are distinctly similar. Attack, i. e., the use of air armament against non-flying personnel, has its parallel in the future possible use of aircraft against seacraft to eliminate or at least discourage the above deck personnel and for close attacks on the highly vulnerable carriers. Actually and in spite of the tendency to surround naval aviation with a mystery whose secrets are known only to those brought up on salt water and tar, naval and land air tactics have a surprisingly large number of details in common with each other.

The fighting plane of the army will do for the navy with the additional strength to withstand the shock of the catapult or the arresting gear. The land plane may have a higher landing speed, but since maneuverability is largely a function of landing speed and a most desirable attribute in a fighter, both land and naval types may well agree as to landing speed. And so, keeping in mind the limitations imposed by launching from and landing on a carrier and storage therein, one notes the decided similarity of design requirements and tactical usage of typical aircraft in both the army and navy.

In considering the present tendencies in naval aviation, the determination to utilize to the fullest extent air-cooled engines is a most commendable one. Provided head resistance can be kept in hand and power development can keep step with the water-cooled type, there is no excuse for using water when air is so plentiful. We thus find the fighters of the navy powered with air-cooled engines. The fighter tendency of both the army and navy has been almost entirely toward the diving type. Diving ability has been emphasized too much. A new fighter which has not the strength to be dived vertically with full power for 5,000 feet is looked upon with disfavor by both services. The ability to climb and maneuver at the expense of some structural strength seems to have no place in the fighting program. If one were to rate in order of importance the desirable attributes of a fighter they would be climb, maneuverability, speed and finally diving ability. As one has pointed out fighters naturally should fall into two classes, offensive and defensive or hunters and interceptors. They were used as such in the late land war and it is certain they will find equal use in the next naval war.

During the initial or air stage of a naval battle one would expect to find high speed fighting patrols scouring the enemy area for opposing aircraft. High speed, the ability to dive quickly to the target and force down by recurring attacks after each dive and zoom the aircraft of the enemy, would charac-

(*Cont. on page 148*)

Typical pursuit types—(top) Curtiss "Hawk" P1-B; (center) Pratt & Whitney engined "Apache" and (bottom) the Boeing-Packard fighter FB-5.

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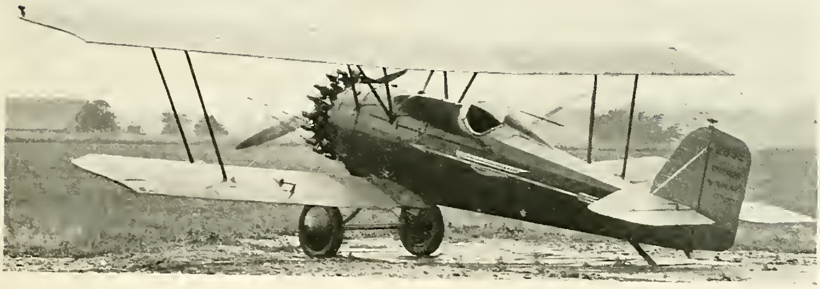

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PITCAIRN AIRCRAFT INC
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THE AIR FORCE AT SEA

(*Continued from page 146*)

terize the fighters used for this duty. The present types would do the trick.

For close protection of both observation and bombardment an entirely different type should be used. It is quite likely that observation planes might need fighter escort. Bombardment planes will certainly need them. Observation flights may well consist of a spotting plane, possessing as it most assuredly should those characteristics of a two-seater fighter, leading a formation of three or five planes, the balance being composed of defensive fighters. The observation mission is a highly important one. It should be able to stay on the job as long as it is needed. For the protection of this mission fighters of a new class might well be assigned. Such fighters would possess maneuverability in the extreme. By lowering the strength requirements and shaving down the weight the excess performance demanded for rapid climb could be obtained. Since it need not be greatly faster than that which it protects, it could carry a proportionately larger wing area which assumes a lighter loading, better climb and maneuverability. Such types would be able to outfight anything which would not dive away. Its shorter turning radius would offset the greater speed of the offensive fighter. Its greater climb would keep it in an advantageous position. Surely the diving high-speed fighter would be driven off unless it attacked from considerable altitude.

Suppose, on the other hand, the protected observing plane is attacked from altitude. As the diving attackers come within range the observing plane would get under the protection. The protecting fighters would turn and climb as each attacking dive was started, for a climbing plane with a light stick load may be easily kept out of gunfire of a fast diving attacker with its accumulated inability to quickly maneuver in a dive. Soon the defenders will reach the level of the attackers for they will not be climbing in the fight. If they mean business they will dive and zoom to get back altitude and immediately dive again. Once they are met by the defenders at a common level they must break combat or be driven down and the observation mission may then be carried on.

Of course it is to be understood that this comparison of the uses of the defensive and offensive fighter is based on the assumption that the defensive type has a distinctly superior climb, a slightly lower speed and considerably more maneuverability. In round figures they would compare as follows: defensive fighter—high speed 155; initial rate of climb, 1,600 ft. min.; offensive fighter—high speed, 165, initial rate of climb, 1,200 ft. min. In other words, the best present design around the Curtiss or Packard pursuit engines would typify the offensive fighters; and the best possible job designed around the Pratt & Whitney "Wasp" to obtain solely the defensive fighter qualities enumerated above would typify this class.

The same argument of close protection applies to bombardment escort. To the inherent ability of any fore and aft gunner airplane to stand off at least two single-seaters is added the ability of a fighting formation to receive and defeat attacks from decidedly disadvantageous positions. After all fighting aviation is an insurance service. It exists for the sole purpose of aiding the observation and destructive elements to get their job done, and they may be used for harassing purposes, that is, attacking generally every thing within range or for an antidote to the same practice on the part of the enemy, and one type of fighter cannot possibly do both things.

Personally one believes that it is now possible to build a faster water-cooled fighter than an air-cooled fighter for the simple reason that no one has had any success in racing with the air-cooled type in its present form. It might also be remembered that it is possible to obtain standard water-cooled pursuit engines of 700 h.p. whereas the air-cooled class is now limited to 500. If the air-cooled type keeps step with the power of the water-cooled type and at the same time holds down its head resistance, it may suffice for our fastest types. In the light of the past few years' development we may expect to see water-cooled engines of 1,000 h.p. within the weight limit of fighting engines. Can the air-cooled type keep step? Possibly with the practice of using additional sections of radial cylinders. The "X" type holds promise on the score of low overall diameter and head resistance for its power output. Certainly there is a limit to which designers may go with the single section radial type.

Passing from the fighting type, an idea which has not been discussed before occurs. One suggests a new type, the "carrier destroyer." It would be a single-seater with all the power it could use and still keep its landing speed in conformity to carrier requirements. It should be stripped of all superflous gear except two front guns and a limited amount of ammunition. It its belly it would carry one 250-pound bomb. Using all the wiles of the racing plane designer, every attribute of speed and diving strength should be built into this plane. It could have wing radiators and all unmilitary tricks of the racing plane, in fact it might well be a Schneider Cup racer with two hours' fuel and two guns, so altered as to retain its ability to get aboard a carrier. It should have if possible 50 m.p.h. more speed than the service fighters.

How would it be used? A squadron of these planes would be aboard a carrier cruising with the fleet. Once contact was made with the enemy, the air components would begin to lock horns. Once the carriers were located, the pilots of the destroyer squadron, who should be young care-free daredevils recruited from among the wildest pilots in the service who should be filled to the brim with whatever it is that turns youngsters berserk in emergencies and told to get the enemy carriers. They would be mounted on the fastest thing in the skies. They could make their approach at altitude and at will. Even though the enemy should concentrate a protecting screen of its own aircraft around the carriers these planes could dive through, lay their bombs on the decks of the carrier and get away by sheer inherent and accumulated speed. Such an attack could be carried out almost without the use of machine guns and they might well be omitted from the armament of this particular type. Such are the attributes and tactics of the carrier destroyer which would hit the enemy in his most vital point, his aircraft bases. Destroy his bases and his air elements are eliminated at least after consumption of the first fuel load. This type can be used equally well by the coast defense of the army or by the navy from carriers on the high seas.

Consideration of the multiseater classes brings forth the axiom that since they will carry military loads other than personnel and armament, they would be larger, heavier, less maneuverable and inherently less able to care for themselves. Self protection and self preservation should be the keynote in the setting up of air elements. The vital elements of observation and bombardment will need the protection of fighters. Equally well will they need every bit of inherent ability to defend themselves for if self defense is carried to a maximum, the mission will stay in the air all the longer. This idea should be applied to observa-

(*Continued on page 232*)

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Byrd

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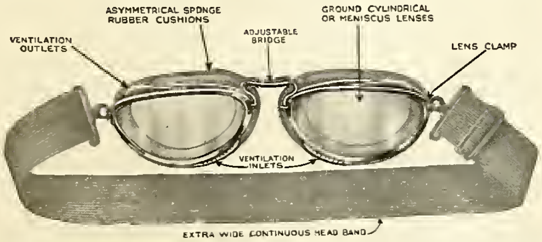
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NEW YORK

Vol. 11 AUGUST, 1927 No. 2

WONDERFUL DAYS!

OUR chance is here, O Brethren in Air-mindedness. We have been praying for such national interest as now has come. Get behind it quickly; push it along and help it.

We must take advantage fully of the wonderful development that suddenly has come upon us. Our fruit tree is weighted down with a great crop, quicker than we, the husbandmen, believed that it would ripen. We must not stop its fertilization because it has begun to bear. Now is the time for work more careful and more energetic than any we have done before.

We must not miss our chance and we must not become wild-eyed in our enthusiasm. We must do things quickly but in order. Develop landing fields in every section of the country. Search our naval and military and commercial needs with care and find out what they really are before we start to work—no loose thinking, no careless building, no waste effort.

We need, for instance, a new flying boat which shall be the world's best. All right, there's one thing on which to concentrate. The boats we have are far from the high standard of efficiency which we have reached in land planes.

When our Five-Year Program has been spurred along, as it will be, by the landing here of a few foreigners, we must be ready to build the best the world has ever seen. American ingenuity can keep us in advance—and it will have encouragement. Now let it do its stuff. The field has not been scratched. There is a chance for some American to make as good a boat as the Dornier-Wal now being built in Germany. Flying boats do not need landing fields. They can come down on any lake or river—and America has many of them. This opening in the market has not yet been touched.

WHEN THE FLIGHTS COME OUR WAY

WE have reason to be proud of our transocean flyers, but it is well that we should carefully prepare our minds for the near day when flights will come from foreign shores to us. It won't be long before the English, French, Germans and Italians will be flying here from Europe and we need be in no wise astonished when Japanese soar to us over the Pacific. Flight is not exclusively our privilege.

Dangerous? We do not think so. On the contrary we think it will be the greatest thing in the world for all these foreign nations and ourselves if they, too, conquer oceans by way of air. We should do everything we can to definitely encourage them.

Nothing will so spur to speed the Five-Year Program as the landing here of a few flying foreigners. We who are air-minded know that they could land, if they desired to; others seem to doubt it. The quicker, then, the foreigners prove up, the better for America, for the sooner we shall be at work in earnest at our national air development.

THE PIONEERS

NOW, when we are tempted to be boastful of the wonderful achievements of our splendid youngsters, is the very time not to forget our pioneers. It is astounding that the air industry and air enthusiasts, with developments as marvelous as they already are, should be able to reflect that some of these original achievers are still with us.

Some of our really great men are buried and forgotten —men who struggled and strove to make machines that really would fly and never had a thought of or a chance at making anything to sell to the Government. I know of one who did a great deal for the art who died in a Florida poorhouse!

We who are on the near edge of the vast development which is to come, to our benefit and the nation's, should stop a minute and give a little thought to this thing.

Is there no way by means of which rightful honors may be distributed among those pioneers who still are with us? It would be fine to at least get these men together, if only to make them the cherished guests of the aeronautical industry. Even if we did no more than bring them to New York or take them to Detroit and let them see the advancements being made, it would be something. And the doing of this, the giving of honor where honor is due, would benefit us and the industry far more than it would benefit the men we honored.

Why forget the men who started all of it? Without them the Lindberghs and the Byrds could not have even had their dreams of flying overseas; without them the air mail would be a fairy dream of future conquest.

MORE HELP

A NEW YORK Democrat, by name William Cohen, will appear in the Seventieth Congress full of enthusiasm over national air development. He is no silk-stocking. He has come up from the people but is now to sit beneath the mighty dome at Washington.

Congressman Cohen has some good ideas about aviation. He believes New York to be the center of the world, for instance, and that it should have an airport fitting for its magnitude and grandeur. He thinks that the air mail loses half its punch because it must be trucked for ninety minutes before it can get to New York's Post Office after it has been dumped from the plane at Hadley Field. He thinks Governor's Island should be used for something more important than a polo ground.

He has no property to sell in Jersey or on Long Island and he sees straight. He can prove with a thousand worthy arguments that Governor's Island is the place. And, in fact, it is obvious that it would make an ideal airport. Watch out for Cohen. He will do constructive and worth while things for aviation and the nation. He can think straight.

In view of the President's recent announcement, urging all centers to dedicate and equip airports, and pledging Federal support for aerial transport as the cities develop local facilities for its reception and dispatch, this announcement by a Congressman, new to the game and therefore with the ordinary citizen's point of view, rather than that of the lawmaker, the military man, or the air enthusiast, becomes important. It is a sign. What the actual people actually demand in the United States they always actually get.

They demand everything they need if they only once find out they need it. They need aviation but some of them don't know it yet. It is the business of those interested to educate them.

A NOD AND A WINK

Away Down North in the Land of Fog

By

Cy Caldwell

WELL, here I am way down North in the beautiful pastoral country of St. Georges, Newfoundland, waiting for the weather to clear so that Cotton and I may fly to New York aboard the good ship *Jeanne D'Arc* of the Daniel Guggenheim Nungesser-Coli Search Expedition. We've been here for two weeks now—the first week being devoted to searching the desolate regions of the interior, and the second week being one of watchful waiting—waiting for good weather and watching the girls.

And as weather is of little importance and as girls are of general interest the world over, I may as well get in a little information about Newfoundland's most important product before I go along to other matters, for you six readers may get down this way some time, and if you do you'll want to be posted on how to find your way about socially and so forth, what to do and what to say, where and when and what and et cetera. In the first place, you virile he-men who read this column for spiritual encouragement will be glad to learn that there is still in the world a pleasant place where girls are at a discount and men are at a premium. This St. Georges is the place. All the men have gone to the States or to Canada, while the girls, if they can't get away too, sit on the shore waiting for visitors to come and bring them a broader, happier outlook on life. So Cotton and I have been God's gift to those who lack a ticket to Boston—which is a sort of Heaven to a Newfoundland girl. Those who get to Boston never come back, and those who are here hope to touch at Boston or New York on their way to Eternity—and they don't care how long a stop-over they're allowed on their ticket.

You see, life is hard for a woman in this country. Electricity and gas are only names, while wood fires and oil lamps are facts. So are milking the cow, tending the chickens, weeding the garden, carrying heavy pails of water, doing washing and ironing, making bread, splitting kindling if the men are away, or looking after the farm animals. Of course, all that was all right back in the days when America was in the pioneer stage and when every woman lived that sort of life. But to-day these Newfoundland girls, still existing in those conditions, know that those conditions are exceedingly primitive and exist no longer even in the rural districts of the more settled parts of the world. So they read *Eaton's* catalog, *The Saturday Evening Post*, *The Ladies' Home Journal*, the tabloid papers and other uplifting bits of literature, and right away they get a hankering to beat it out of here so fast that the codfish and the salmon disporting themselves in the bay will stand on their tails asking each other helplessly what it was that passed them so quickly. In fact, the most popular thing in this country is the train that connects with the boat bound out to the world. So far as the girls are concerned the cod and trout can have this place all to themselves and do their own cooking and milking of the cow if they want to. Every train-day—which comes three times a week—the village belles gather at the railroad station and watch the train go by. Their limpid blue or brown eyes are filled with longing as they think of some girl on the train who has a ticket all the way to Heaven—Gimbel's Basement, Woolworth's, Child's or somebody's kitchen. It doesn't matter where it is, so long as they can turn on the gas and fry an egg without going through a course in woodchopping and the Boy Scouts' Manual on how to make a good fire out of damp wood.

Now, all this being so, the casual visitor from out yonder is an object of interest to longing maidens, who are eager to get a detailed description of what it's all about, preferably by moonlight, though any time of day will do. And as I am living merely to make life brighter and happier for those with whom I come in contact, I have been glad to sit down any time and tell those trusting damsels just what the big city is like, and to hand out quite a lot of advice in my fatherly way. I believe I can say truthfully that any of these hopeful girls who have taken a course with me is now thoroughly prepared to combat life at its worst.

However, two pilots of advanced years—both Cotton and myself are very old men and long past our prime, if any—are incapable of the staying powers necessary for home-study courses of this sort. We began to show the wear and tear after a week of it, and I really don't know what would have happened if the British Admiralty hadn't heard of our plight and sent the light cruiser *Cairo* to our assistance. Two hundred sailors were landed from the *Cairo*. Now, when those launches drew up at the dock, the wharf was crowded. There were girls everywhere. And in five minutes there wasn't a girl in town. And there wasn't a sailor, either. The place was deserted. But in ten minutes the village was full of rabbits that came loping in from the woods, looking for peace and quiet.

And they sure would find it here. Why, Philadelphia on a Sunday afternoon is a roaring place compared to this. As I write I'm sitting in Captain Thomas Butler's office looking out on the tracks and a bit of wharf. Four young men are lying on the freight platform wondering if God is ever going to send them a ticket to the States; two discouraged sheep are grazing—apparently on cinders—and a most mournful-looking cow is chewing her cud and seems to be thoroughly disgusted with everything. I suppose she's trying to figure out some way she can get down to New York and work for the Sheffield Farms Dairy. It's all very pathetic.

And the reason for it all is that this is a large, mostly unsettled country, with a population less than that of a fair-sized city—only 250,000 men, women and children, with the greater proportion of them children. Children! Nothing but. That's the only crop they seem to have much success with. And whiskers—they do pretty well, too. But the rest of the vegetation and animal life simply takes a good sniff of fog and then lies down and says, "What's the use going on growing?" Even the animals quit before they've got anywhere. They have horses here so small you could take them into the New York Subway and hold them on your lap without anyone noticing you had anything. And if anyone did happen to glance your way he'd simply say, "Lookit de guy wit' de Pekinese. Whatcha t'inka dat?" The goats do better. A goat's a naturally cantankerous critter. Put him up against discouraging conditions and he thrives on them. You'll see places on the rocks here worn down where the goats have been sharpening their teeth so they could chew the sort of beef I eat every day. The sheep seem sort of fed up and disgusted. They go around making sad

(Continued on next page)

whining bleats which remind me of an aircraft manufacturer leaving Washington without a contract.

Lack of population, that's the trouble. Wonderful country; kindly, simple, lovable people. But not enough of them. You could put the whole lot in the Bronx and the place wouldn't look any more crowded. It might look funnier—no, I guess the Bronx couldn't get any funnier than it is now. Ask anyone in Manhattan.

But I want to tell you six readers, if you want a rest and a change from the tiresome, wearing life of civilization, come to Newfoundland. You'll love it—for awhile. It's so different. For instance, here you'd never suspect that women had arms, necks, or legs unless you really went out to investigate. The girls are all covered up, every bit of them. Not that I notice these things as a rule. But it's been mentioned to me, you know. A low-necked dress is unknown—even in night-dresses. I've seen them on the lines—flannel, and just a hole at the top end to stick your head through—her head through, I mean. I'll defy any woman to look attractive in a grey flannel night-dress. I couldn't do it myself. Low sleeves are an abomination here—the girl is obviously exposing herself for no good purpose. And as for rolled stockings and such things as Teddies—well, they're snares of the devil, that's what they are. And anything made out of silk is a temptation of the evil one. Good honest cotton and wool is what we girls go in for down here—they wear longer, cost less, and don't turn the boy's heads. There's much to be said for them, you see.

But all the above is about these little "Outport" places, as they are called. St. John's is a modern progressive city—in the Newfoundland acceptance of the words. They have street-cars, electric lights, gas for cooking—in fact, anything that any city anywhere possesses, including a hotel that would be a credit to any small American city. Liners from England and the States call at St. John's and do a thriving business in fish and tourists. Fairly live town, though quaint and old-fashioned according to our ideas. Two movies add a touch of Metropolitan glamour to the scene, and silk stockings are not unknown. They even pass without remark, a thing they can't seem to do here in St. Georges—St. George is the patron saint of this district. Quite an appropriate position for him, too. "Let George do it," is the motto of this whole section. The only thing is that George evidently won't do it. I don't blame him—he's probably fed up too, and is wondering how he can get to Boston.

Well, our search of this country for Nungesser and Coli is over, and we are waiting for fit weather in which to hop over to the mainland and fly home. Fog and rain for the past week has held us here. Gentle southerly winds have been bringing the warm air of the Gulf Stream up to the cold waters that surround Newfoundland, with the result that cold clinging fog has enveloped the southern part of the coasts and the coast of Nova Scotia. Sometimes it would clear in parts, but always other parts were fog-filled. The sort of weather that if anyone had been dying anywhere we could have taken off and flown—but not worth the risk when we're merely going home. So here we sit. A southeasterly gale is blowing to-day, with rain and fog in the Straits, though it is merely overcast here. That's the sort of weather we've been up against most of the time. We've flown when we could, and when we couldn't we sat down. I'm in a permanently bent-over position from sitting down with my hands in my pockets.

And I want to announce this, after flying six thousand miles over this country: My charge for flying again in Newfoundland is $2,000 a month and all expenses, including food I can eat, shipped in from the States. The primitive living and eating conditions are the worst of it, but the flying itself is a close second. We've been over country absolutely devoid of human inhabitants for fifty-miles in any direction from the center of a circle. And that fifty-mile walk, in case we got down there, would be over barrens, swamps, and rocks, across or around hundreds of ponds and lakes, through well-nigh impenetrable underbrush and spruce thickets, filled with millions and millions of flies, mosquitoes and other exports of the New Jersey meadows. In order to walk fifty miles in a certain direction, we would have had to cover perhaps 100 miles of territory, escorted by legions of insects. Men have come out of that country with their heads and faces swelled to twice normal size from insect bites—for these flies are more poisonous than are our common mosquitoes. A man who has been well-bitten by a Newfoundland regiment of flies would go to New Jersey and get himself stung by their mosquitoes merely as a sort of vacation, for up here we have flies so vicious they take a bit out of you and then growl menacingly and slap your face if you don't taste right.

Now, I have experienced none of this, except in small doses along the coast where we make our bases, but I can imagine what it would be like if the good old Wright Whirlwind died down to a gentle breeze and then became a flat calm. The only calm thing about that plane would have been the engine, for if I had had to step out on the shore of some unknown lake and start walking back with sixty pounds of food and equipment snuggling against my back, I haven't a doubt that my usual placid acceptance of life would have deserted me. The flies would have walked off with it—and with all the exposed portions of myself as ballast. I couldn't help thinking of those things as Cotton and I went cavorting over the wilderness. I don't think I was nervous about it—for I had every confidence in our trusty engine. But it did make me thoughtful—especially when we went for miles and miles where there wasn't a decent lake to land in. A crash in this country away from the inhabited area, which is small, would be a serious matter. If one had been injured so that he couldn't walk, or look after himself if left alone, the other couldn't leave him, even to get help. It would have been a matter of waiting for a searching party to find us, or waiting until the injured one had recovered sufficiently to walk. So, all things considered, I'd sooner confine any further flying to places where there are a few of the rest of you sticking around. As it was, everything went along fine.

About our friends from France—I don't believe they got to Newfoundland. And that isn't because we've searched most of the probably country and haven't found them. We haven't covered all of it—we'd have to stay here two years in order to search every foot of the island—but after flying around I have come to the conclusion that the *White Bird* couldn't have flown into this country at all without very many people hearing it. To the reports of the plane being heard by several people in widely separated parts of the island, I attach no credence whatever. They may have heard the plane; they may not. Doubtless they think they heard it. But sound travels a long way along the water, and becomes distorted into something that it isn't. A week ago twenty people in St. Georges heard an airplane, saw it alight on the waters of the bay, at night, watched the red and green navigation lights circle about, until the plane taxied to the side of the cruiser *Calcutta*. It proved to be the ship's launch. The other night I sat on the end of the wharf and heard an airplane—which proved to be a motor launch whose exhaust echoed from some red sandstone cliffs on the shore. So there you

(Continued on page 231)

CONSISTENCY!

The Lindbergh, Chamberlin, Maitland and Byrd flights had one common factor—the Wright Whirlwind Engine.

The consistent selection of this engine by these world-famous fliers—as well as by many others whose page in history is not yet written—is equalled only by the flawless operation of the engine, whose uniform performance had played a major part in these epochal events.

This choice was not haphazard. It was logically based upon the actual performance of the engine itself. Its record of over 4,635,000 miles flown during 1926, in civil and military service, is alone sufficient to justify universal confidence.

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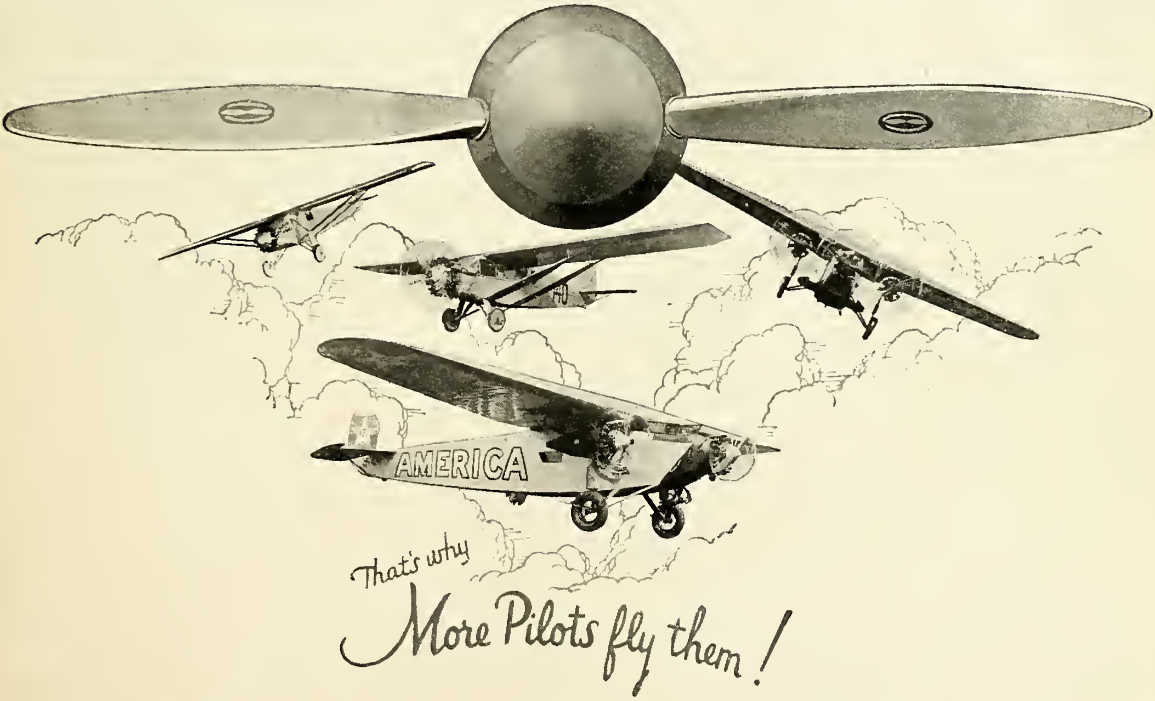


WRIGHT

AERONAUTICAL CORPORATION Paterson, N. J., U. S. A.

The Fairchild factory and flying field at Farmingdale, L. I.

DEVELOPMENT *of the* FAIRCHILD COMPANY

THE rapid development of the Fairchild Company from a single unit in 1917 to a group of eight individual companies covering practically every phase of aeronautics with the exception of lighter than air is an outstanding example of the progress of Aeronautics in America today.

The first Fairchild Company was the Fairchild Aerial Camera Corporation, followed shortly afterward by the Fairchild Aerial Surveys, Inc., the Fairchild Flying Corporation, and at a later date the Fairchild Airplane Manufacturing Corporation and the Fairchild-Caminez Engine Corporation. All of these companies are subsidiaries of the Fairchild Company which is the holding, managing and financing company of the group.

Additional members of the group are: Fairchild Aviation Limited, Fairchild Air Transport, Limited, of Canada and a substantial interest in the Compania Mexicano de Aviacion, the largest aircraft operating company in Mexico.

The Fairchild Camera Corporation was formed during the war to manufacture an improved automatic aerial camera devised by Sherman M. Fairchild to meet the war time lack of suitable cameras for aerial work. As a result, this company has been the leading and almost sole manufacturer of automatic aerial cameras in the United States ever since. Ernest Robinson is vice-president and general manager.

After the war the Fairchild Aerial Surveys, Inc., was organized for the purpose of producing aerial maps on a commercial basis. After many experiments and a great deal of research work in conjunction with engineers of a number of large companies who recognized the value and efficiency of accurate photographic maps, this company succeeded in making maps of such a high degree of accuracy that they are now generally used for power line surveys, taxation reappraisals, railroads and for many other purposes. E. R. Polley is general manager of the Survey Corporation.

After the business of making maps was started it was found necessary to improve the conditions under which the photographs were taken. It was difficult to find sufficient airplanes in widely scattered sections of the country capable of carrying out a schedule of aerial map making with any great efficiency. The majority of planes were surplus war types which required refitting for photographic work. At this point the Fairchild Airplane Manufacturing Company was formed to build planes primarily for photographic purposes. However, the Fairchild Flying Corp. had grown now to a point where it was one of the largest operators of aircraft in the country covering a wide range of missions from aerial photography to passenger, payroll and express carrying. The Fairchild Airplane Manufacturing Company therefore decided to develop an all-purpose plane which would fulfill all requirements of the flying corporation and other operators. The result was the production of a monoplane with folding wings and completely enclosed cabin. The pilot's cockpit, which is completely enclosed in non-shatterable glass or other unbreakable transparent material, offers an unlimited range of vision. An exceptionally fine performance and range has made this plane one of the leading commercial types now produced in America.

Welded steel tubing is the construction throughout with cloth covered wings, tail surfaces and cabin. It is powered with the Curtiss C-6 or Wright Whirlwind engine. A detailed description of the Curtiss C-6 engine plane appeared in the July issue of AERO DIGEST.

There has been such a demand for this plane that it has been twice necessary to extend the plant within the past six months. The factory is at Farmingdale, L. I., adjacent to the flying field.

The necessity of supplying pontoons to meet the demand for hydro-airplanes soon presented itself with the result that the Metal Boat Division was formed. From a wealth of information, relative to the water and air performance of many types of pontoons, this company has developed one of wood and metal which has proved unusually successful in performance. An intermediate size suitable for airplanes of 2,500 to 4,000 pounds is now being produced in quantities. Other sizes are being developed as well as flying boat hulls.

The manufacturing of airplanes is under the direction of Russell Kincaid; airplane engineering under Fred Weymouth; floats and flying boats, A. R. Stalb and sales are handled by R. H. Depew, jr.

The next development of the Fairchild organization is that of the Caminez engine. Harold Caminez had been developing a cam type of engine which embodies revolutionary principles in the design of internal combustion engines. After a thorough investigation by Sherman Fairchild, the Fairchild-Caminez Engine Corporation was formed to put the new engine into production turning them out in quantity at a moderate price for the commercial market.

The first model was 135 h.p. which will meet the requirements of practically every manufacturer of medium size commercial type airplane. This model recently passed successfully a 50-hour test. The company is now ready to build them in quantities and place them on the market.

The Fairchild Company in addition to its domestic subsidiaries has several foreign companies engaged in the operation of aircraft. The Fairchild Aviation, Limited, is the leading operator in Canada. Its activities combine aerial survey with miscellaneous services, such as air taxi and special missions. The Fairchild Air Transport, Limited, is another Canadian company organized for the purpose of operating air transport routes in Canada. It is at present operating a regular service between Rouyn and Haileybury.

In Mexico the Compania Mexicana de Aviacion operates on a plan similar to the Fairchild Aviation, Limited, in Canada and the Fairchild Flying Corporation in the United States.

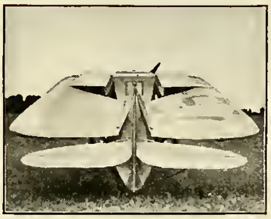
The history of the Fairchild Company indicates a constant vigilance for improvements and a growth which has kept up with the aircraft industry as a whole.

Department of Commerce . . .

WILL use Fairchild "All Purpose" Monoplane to accompany Lindbergh on his tour of the United States. The features which prompted the Department of Commerce to use Fairchild make this 'plane the outstanding success on the 1000-lb.-payload class.

Never before has practically 100 percent vision been obtained, over the engine, down on each side, 45 degrees forward through the floor and even back through the roof to see an overtaking airplane—although it takes a pursuit "ship" to overtake you.

A cabin arrangement is provided with comfortable upholstered seats, which quickly fold to the side for photographic or freight-carrying use, and with three large doors for convenient entrance. Truly an "All Purpose" ship!



Wings easily folded to this compact form in two minutes!

Performance which can only be obtained by the most extreme refinements in streamlining, the result of six months' testing in the wind tunnel. Controls which are sensitive, quick, and operate with slight pressure — through use of small, properly designed, tapered ailerons without make-shift balances. *A 'plane that flies itself to such an extent that Curtiss and the Department of Commerce pilots do not hesitate to leave the pilot's seat for long periods.*

Such improvements as wings that can be folded in less than 2 minutes; a new type of landing gear without rubber and without rebound; servo brakes inside of duralumin disc wheels. The Fairchild Monoplane is the fastest selling airplane in its class and the choice of such experienced operators as Department of Commerce, Curtiss Flying Service, Edward Ronne, Manager Buffalo Airport, Ludington Exhibition Co., Brock and Weymouth, Fairchild Aviation, Limited, and Compania Mexicana de Aviacion.

Fairchild is ready for the demand with a new factory and complete production equipment. For the first time true interchangeability of parts and a quality airplane—at a price made possible only by two-a-week production. See this airplane on the Lindbergh tour, or at the local Fairchild agent, or fly into Farmingdale to see real quantity production in our new plant. Fairchild Airplane Manufacturing Corporation, Farmingdale, L. I., N. Y.

FAIRCHILD

FAIRCHILD AIRPLANE MANUFACTURING CORPORATION
FARMINGDALE, LONG ISLAND, N. Y.

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. . . and more safe

This is the day of Commercial Aviation . . . of safe flying for profit. Safety is paramount in all equipment—but the cost per trip—economical operation—also becomes a factor. And in the business of flying, as in other forms of transportation, Goodrich Silvertowns play their part. Aviation secures safe landings—and more of them—from a set of these remarkable tires.

MOTIONLESS now—these Silvertowns must hurl in a fleeting instant to forty-five—or ninety—miles an hour!

That is what landing means to an airplane.

In that brief instant, when earth and rubber meet, the safety of the plane and its passengers or cargo depends on the structure of its tires.

No wonder the airplane industry calls upon Goodrich tire-building experience—an experience of fifty-seven years with

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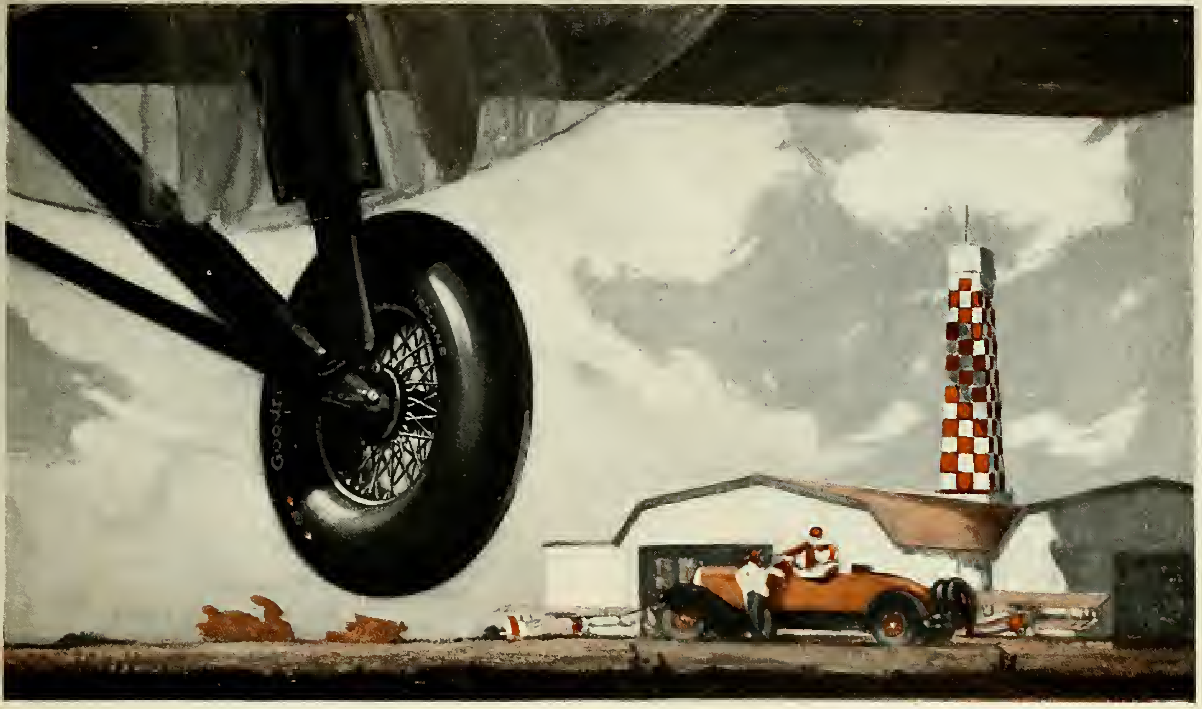

landings for the airplane

rubber—to give utmost dependability in airplane tires.

The largest tire in the world is a Goodrich Silvertown—built for airplane use!

The first airplane passenger service operated in America was equipped with Goodrich Silvertowns!

Goodrich Silvertowns crossed the Atlantic on the first non-stop flight.

The world knows the care with which every article of equipment was chosen for that first flight.

The hazards of extra weight—overloads of fuel—put new responsibility on the tires at the take-off. Unknown landing fields waited at the other end of the flight—with the spectre of forced landings in between.

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Silvertowns

LONG RUN''

DEVELOPMENT of the CAM TYPE AVIATION ENGINE

FROM his early youth the interests of Harold Caminez, inventor of the cam type of aviation engine, were directed to aeronautics.

After graduating from a preparatory school he entered Cornell University and took up the study of mechanical engineering. After the second year at Cornell, he took a year's leave of absence and procured a position with the Curtiss Aeroplane and Motor Company. From his experience there he concluded that one of the important developments necessary for more widespread use of the airplane was a simple and reliable aircraft engine. When he returned to Cornell to complete his studies, he specialized in power plant design and thermodynamics, and there he investigated and made a complete analysis of mechanisms with their special application for use in airplane engines.

After graduating from Cornell he was employed as draftsman in the Engine Design Section of the Engineering Division of the U. S. Army Air Service, which position he held for two years when he was promoted to be assistant to the Chief of the Engine Design Section. When his Chief resigned he took his place which position he held until he resigned from the U. S. Army Air Service to become the Chief Engineer of the Fairchild Caminez Engine Corporation. In the U. S. Army Air Service he worked on the design of the Air Service Model "W" and Inverted Liberty Engines, made design and stress analyses on all aircraft engines submitted to the U. S. Army Air Service, conducted dynamometer laboratory tests on the experimental designs produced by the Engine Design Branch at McCook Field, and aided in the development of piston, cylinder, and bearing designs used in the various engines developed by contractors for the Air Service.

His experience in the U. S. Army Air Service afforded a proper background for working out the various engine mechanisms he had studied at college. He believed it would be possible to develop an entirely new type of engine with characteristics especially suitable for aviation purposes. In 1923 he conceived the idea of the cam engine. He concluded that a proper mechanism built around the cam mechanism would be best suited to the air-cooled type of aircraft engine. Caminez does away with the crankshaft, timing gears and connecting rods necessary in the conventional type of engine thus eliminating many parts and making the engine very simple in its construction. In place of a crankshaft this engine makes use of a cam and roller mechanism through which the power is applied directly from the cylinders to the propeller shaft. The mechanism is such that each piston completes a power stroke with each revolution of the cam instead of every second revolution as in crankshaft engines. This makes it possible to obtain a high power output at slow propeller speed, thereby permitting the use of a propeller of great efficiency. Because of the slow propeller rotation, simplicity in construction, the perfect balance, low head resistance and frontal area, and its adaptability to air cooling, this type of aircraft engine has many advantages.

In 1923 Mr. Caminez designed the forerunner of the present cam engine which he submitted to Major Hallett, then the Chief of the Power Plant Section of the U. S. Army Air Service at McCook Field, who was favorably impressed with the idea and gave some valuable criticisms concerning it. Encouraged by this Caminez began to devote all his spare time in the study of the cam mechanism and its adaptability for use in aircraft engines. In order to gain more experience with this new type of mechanism, he constructed at night, in the Dayton Y. M. C. A. shops, a small cam engine designed to operate on compressed air. He took this engine to the Power Plant Laboratory at McCook field to test it out and ran it off the air line under no load. The completed engine operated very satisfactorily and is still on exhibition at the factory of the Fairchild Caminez Engine Corporation where it is used to demonstrate the cam principle.

All of the work on the first engine Caminez did himself. Having designed it he also made the patterns and did all of the

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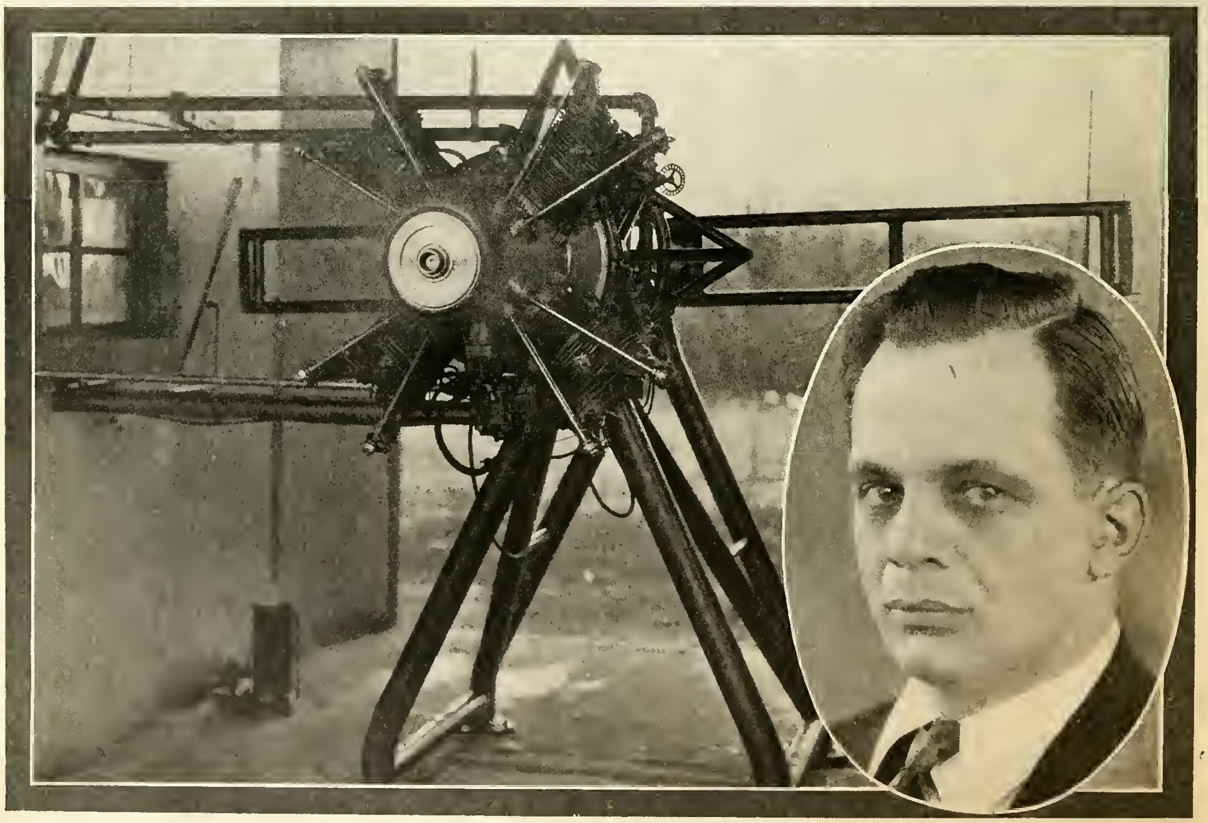
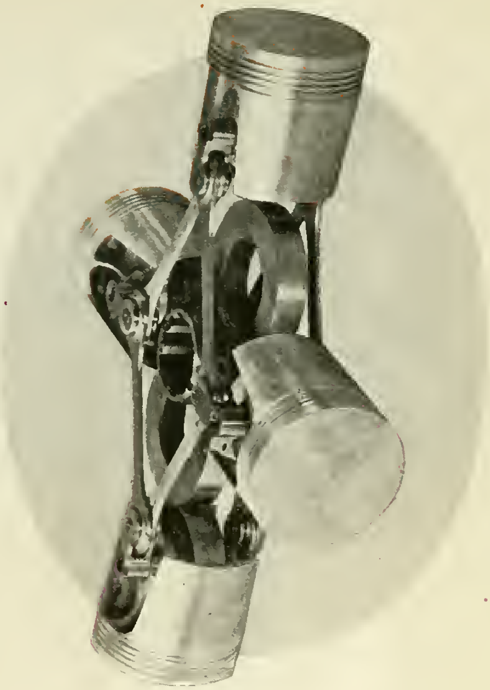
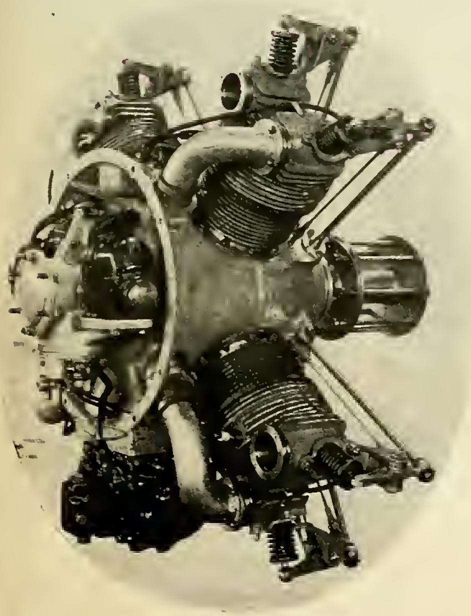


The four-cylinder crankshaftless Fairchild-Caminez 135 horsepower aviation engine and its inventor, Mr. Harold Caminez.

MAGNALITE CASTINGS IN THE FAIRCHILD CAMINEZ AIRCRAFT ENGINE





MAGNALITE *heat treated* aluminum alloy castings have been specified by the Fairchild organization since its beginning. First for use in the construction of aerial cameras and now for pistons and other parts in the Fairchild Caminez engine.

Magnalite *heat treated* aluminum alloy castings have been used for over 23 years by the automotive industry and by the aircraft industry since its beginning. Castings for aircraft purposes which meet Government specifications are our specialty.

WALKER M. LEVETT COMPANY

The Pioneer Aluminum Alloy Piston Manufacturer

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CAM TYPE AVIATION ENGINE

(*Continued from page* 158)

machine work necessary for its construction. From the experience gained in the construction of this experimental model he designed a cam type internal combustion engine for aircraft use. This design was submitted to the Chief of the Power Plant Section at McCook Field and an appropriation was obtained for the construction of an experimental engine utilizing the new cam principle. In order to build this experimental engine as rapidly as possible and at a minimum cost, it was constructed mainly of spare parts and left-over parts of existing aircraft engines. The new engine was not intended to be a developed aircraft engine, but was built mainly to obtain design and test data on the cam mechanism employed.

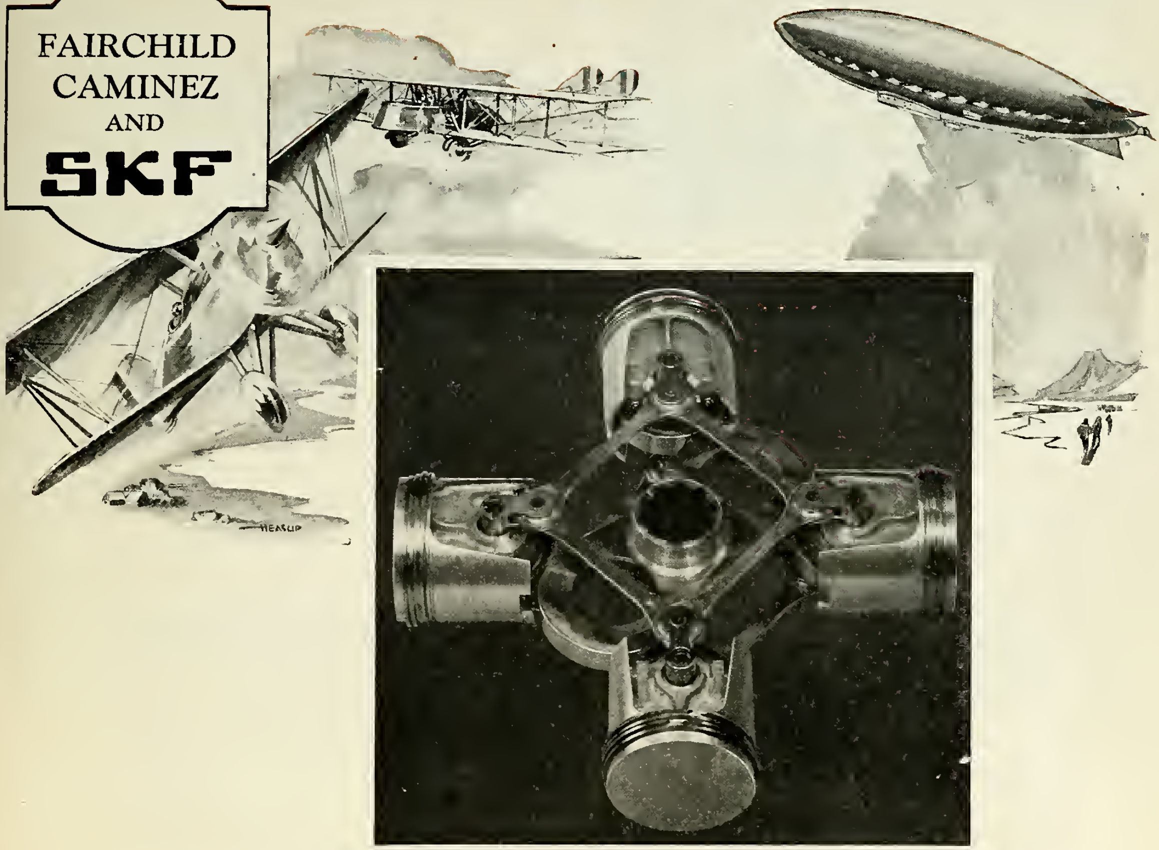
After numerous delays and modifications the first Cam engine was completed under the direction of Caminez. The engine was tested in the laboratory on the dynamometer and the results obtained were, in the main, highly satisfactory. The engine developed 120 horsepower at 900 r.p.m. developing a maximum brake mean effective pressure of 124 lbs. per square inch with a mechanical efficiency of 91 per cent at 600 r.p.m. and 85 per cent at 900 r.p.m. Inasmuch as the drive shaft speed of the cam engine is equal to one-half crankshaft speed of the conventional engine, 900 r.p.m. in the cam engine is equivalent to 1800 r.p.m. of the crank engine, which is the usual speed that radial crank engines are operated. In the very first cam engine—despite the numerous minor weaknesses that developed—the cam mechanism was proved to be entirely practicable.

At this time Sherman M. Fairchild, President of the Fairchild Aviation Corporation and inventor of the Fairchild Aerial Camera, which is standard equipment of the U. S. Army and Navy and several foreign governments, became interested in the cam engine. Fairchild is building up an organization with subsidiary corporations in almost every branch of the aviation industry. Production of an airplane engine formed an essential part of his plans, and, impressed with the possibilities of the cam type engine for aircraft purposes, he undertook to finance its development. With the approval of the Chief of the Air Service, the Fairchild Caminez Engine Corporation was formed and Harold Caminez resigned from his duties as Chief of the Engine Design Branch to accept the position of Chief Engineer of the newly formed corporation. The first aircraft cam engine designed completely for the explicit use of the cam mechanism and differing radically in design from the McCook Field cam engine (which was designed to utilize available old engine parts) was designed and constructed. This engine was run at McCook Field for about 50 hours. It was then delivered to the factory of the Fairchild Caminez Engine Corporation and was further tested in the newly erected laboratory. After the laboratory tests it was installed in an airplane and thoroughly tested in actual flight.

A highly trained aircraft engine organization has been formed for the Fairchild Caminez Engine Corporation and is carrying on development of the Cam Engine. Although at first primarily designed for military training purposes, this type has also been found adaptable for commercial use. Arrangements have been completed for quantity production of the present four-clyinder engine. New precision machinery is being ordered to insure accurate manufacture of this size and the company is now preparing designs of a 16-cylinder cam engine which will develop at least 600 horsepower. One of the primary reasons for the development of the original four-cylinder unit by the United States Air Service was to furnish the basis for design of a 16-cylinder engine using four of the four-cylinder units. This development is now being pushed by the Fairchild Caminez Engine Corporation for large commercial and military transport planes. Because this will be the only low speed air-cooled engine with the resultant low fuel consumption and high propeller efficiency this large cam engine is expected to help in the establishment of new airplane endurance flight records and to give further impetus to commercial and military aerial transport.

Today, at the age of 29, Harold Caminez is Vice-President and Chief Engineer of Fairchild-Caminez Engine Corporation with offices in New York City and factory at Farmingdale, Long Island. Surrounded with a highly trained organization of experienced engineers and guided by Mr. Fairchild, an able and far sighted executive, he is beginning to see the results hoped for.

THE
CAMINEZ CAM ENGINE
is equipped with
SCINTILLA
AIRCRAFT MAGNETOS
SCINTILLA MAGNETO CO., INC., SIDNEY, N. Y.
Contractors to the U. S. Army and Navy



Severe Service Proves SKF Bearings on Fairchild-Caminez New Type of Aircraft Engine

ALL the advantages of anti-friction bearings are realized on the four-cylinder 150 H. P. Fairchild-Caminez engine shown above, which represents a new idea in combustion engine development. It is completely equipped with ball and roller bearings. SKF has played an active part in the development of roller bearings for this engine. In addition, the tremendous thrust of the propeller is taken on an SKF-marked, Hess-Bright Deep-Groove Ball Bearing.

In this type of engine, the roller bearings are subject to both a reciprocating and an accelerating motion. This is extreme service for anti-friction bearings. There are 4,800 reciprocations of the bearings when the motor is operating at a speed of 1200 R. P. M. and also 4,800 accelerations and decelerations of the bearings from 1560 R. P. M. to 2600 R. P. M. at this speed. SKF anti-friction bearings have practically eliminated friction, increased reliability, simplified upkeep and maintenance and passed all test requirements.

SKF INDUSTRIES, INC., 40 East 34th Street, New York City

1872

Ball Bearings

More than 100 Factory Offices Throughout the World
SKF
Puts the Right Bearing in the Right Place

Roller Bearings

PARAMOUNT
Fuel & Oil Tanks

All Fairchild airplanes are equipped with Paramount Aluminum Fuel and Oil Tanks.

We are now specializing in the construction of large capacity fuel tanks for long distance flights.

A large number of leading aircraft manufacturers specify Paramount Tanks.

Weight
2½ gallons to a pound

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WE are particularly proud that the Fairchild organization has found our service satisfactory in every respect.

Practically every well known manufacturer of aircraft and engines is supplied with materials by our company. Our long experience and large stocks enables us to meet the requirements of the aircraft industry quickly and at the lowest cost.

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REGISTERED U.S. PAT. OFF.

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Designed and processed specially to meet aircraft manufacturing requirements.

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E. S. TWINING & COMPANY
320 Broadway New York, N. Y.
Cable address: Flightex *Code: A.B.C. 6th Edition*

THE FAIRCHILD-CAMINEZ ENGINE

THE Model 447-B is a four-cylinder, radial, cam type engine of 5⅝" bore and 4½" stroke with a total piston displacement of 447 cubic inches. It operates on the conventional four-stroke Otto cycle, the standard commercial engine having a compression ratio of 5.0 to 1. This engine is rated 135 horsepower at 1,050 r.p.m. and develops normally 142 horsepower at 1,120 r.p.m. The weight of the engine complete with the exception of starter and propeller hub is 340 pounds. The over-all width and height of the engine is 37½" and the projected frontal area is 3.9 square feet. Normal fuel consumption at full open throttle is less than .53 lbs. per hour, and the fuel consumption at three-quarters throttle, corresponding to the normal cruising speed, is .48 lbs. per b.h.p. hour. The oil consumption is .03 lbs. per b.h.p.

Ignition is provided by two four-cylinder Scintilla magnetos, each magneto firing a separate spark plug in each cylinder. A Stromberg NA-U-5 duplex carburetor is employed, two opposite cylinders drawing from each barrel of the carburetor. All bearings are of the ball and roller type and manufactured by the Norma-Hoffmann Bearings Corporation and the S.K.F. Industries, Inc.

The drive cam is a chrome vanadium forging, heat treated to obtain maximum surface hardness on the cam profile, and carefully ground to conform to a master cam which has been generated to be correct to within .002". This cam is splined to the main engine shaft. The piston rollers are special double-row roller bearings, the outer races of which act as the cam rollers while the inner race of the bearing is mounted on the piston pin. The roller races are made of high chrome, high carbon steel and are finished by grinding and lapping. Twenty ½" rollers, contained in an extruded bronze cage, are used in each bearing.

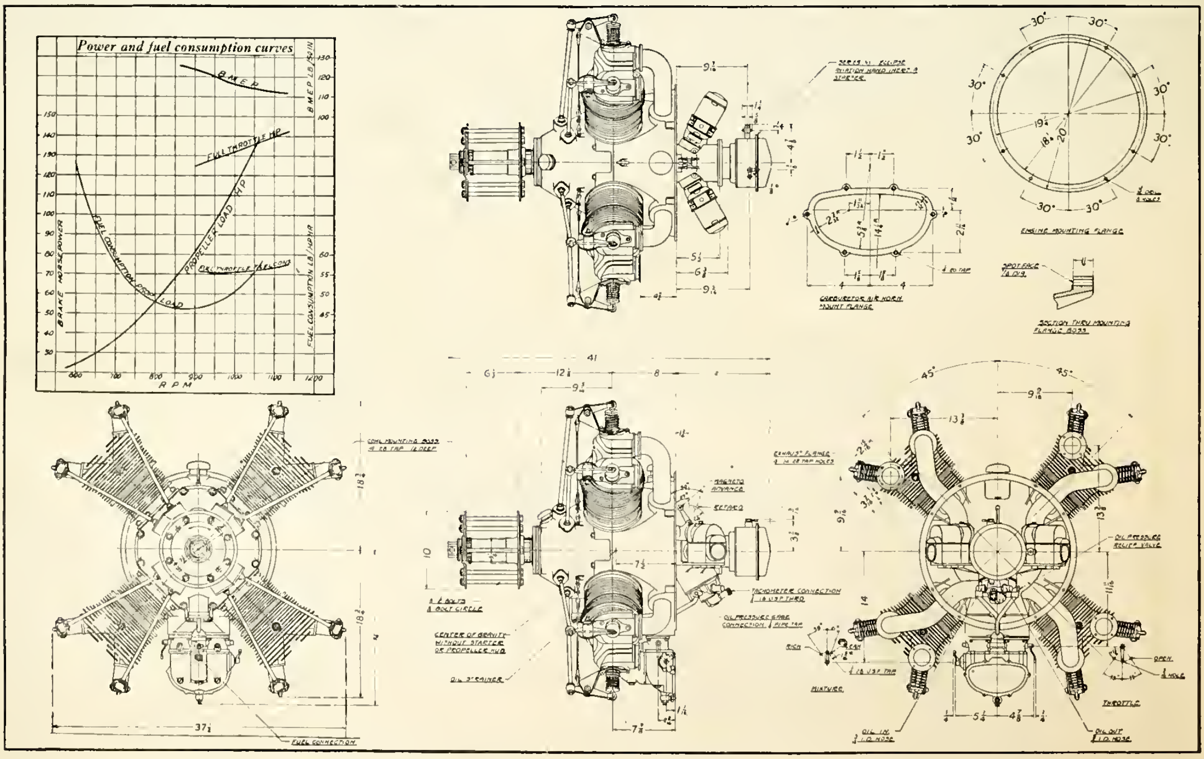
The pistons are of heat treated aluminum alloy of the slipper type with large bearing areas on their thrust sides. The piston head is ribbed to increase its strength as well as to facilitate piston cooling and four narrow rings are provided. The special cam roller bearing is mounted in each piston on a carburized and hardened alloy steel piston pin. The link holders are keyed and bolted to each end of this pin. Piston inter-connecting links are made of heat treated alloy steel and are mounted in the link holders upon double-row roller bearings. The load on these links and link bearings are only those due to the inertia forces of the piston assembly acting away from the cam. Due to the special shape of the cam employed, the load on the links is constant throughout the engine cycle at any given engine speed.

The main shaft of the engine is a straight hollow shaft twenty-two inches long made of heat treated alloy steel. This shaft is supported in the cam case at the rear by a roller bearing and at the front by a deep groove radial ball bearing which locates the shaft and takes all thrust loads. A large plain bearing is provided in the center of the shaft.

The main engine case or cam case consists of two heat treated aluminum alloy castings which are bolted together. The magnetos and oil pumps are driven by bevel gear pinions which mesh with a bevel drive gear driven from the main engine shaft by means of an intermediate shaft. This shaft has at its rear end a straight spline which engages with the bevel drive gear, and has at its front end a spiral slot through which it is driven by the hardened pin in the main engine shaft. Means are provided for axially displacing this intermediate shaft, the movement of which rotates the bevel drive gear with respect to the main engine shaft and is thus employed to advance or retard the magnetos. The bevel drive gear has an integral spine and jaw clutch which provides an engagement for either the electric or hand-type starters.

The oil pump is mounted at the lower part of the auxiliary unit and possesses separate pressure and scavenging oil pump compartments. This pump, which is of the conventional spur gear type, runs at double the engine speed and an adjustable oil pressure relief valve is incorporated in it. A reduction gear at the bottom of the pump drives the tachometer shaft at one-half of engine speed. The pressure pump draws oil from the outside tank and delivers it to the compartment in the front engine casting.

Each cylinder consists of a cast aluminum alloy head screwed and shrunk on a high carbon steel finned barrel which is carefully ground to within close limits. The hardened surface provides an ideal bearing for the piston, effectively eliminating all wear. Steel cylinder skirts are fitted in the cam case and have a recess into which the cylinder barrel pilots.



Power and fuel consumption curves and installation drawings of the Fairchild Caminez engine.

PRECISION

in the Norma-Hoffmann sense — is the definite factor in service-ability, the value of which is clearly revealed to those who, after experience with other anti-friction bearings, have found complete satisfaction in "NORMA" Ball Bearings, in "HOFFMANN" Roller Bearings, or in both together.

Commensurate with such precision is the resulting reliability so ably expressed by the recent accomplishments of both Trans-Atlantic and Trans-Pacific flights in which NORMA-HOFFMANN Bearings played significant roles.

Of the Fairchild-Caminez Engine the designer says:

"IN the fifty hour test, as well as in our development and flight tests of our Cam Engine, we have used Norma-Hoffmann ball and roller bearings with perfect satisfaction. As our engine is the first American aircraft engine which uses anti-friction bearings of the ball and roller types exclusively, we were careful in the choice of manufacturers for our bearings. These bearings have withstood the tests we have subjected them to with complete satisfaction. The low friction and absolute reliability of Norma-Hoffmann ball and roller bearings used in our engine are one of the contributing factors to its long life and dependability."

(Signed) HAROLD CAMINEZ.

Catalogs descriptive of "NORMA" and "HOFFMANN" Precision Bearings are available to those who are interested.

-NORMA-
HOFFMANN
PRECISION BEARINGS

NORMA-HOFFMANN BEARINGS CORPORATION
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graphite filled self-lubricating valve guides

Helical grooves with compressed graphite filling flush with the bearing surface.

Made of fine close grained cast iron body with a smooth machine finish all over. Installation and replacement requires no reaming whatsoever.

Made to exact dimensions with machined surfaces absolutely clean. Made for any type of motor.

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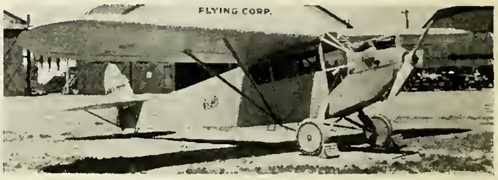
to indicate oil and water temperatures



The MOTO METER CO., Inc.
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Chicago Office: 820 Tower Court

DAYTON WIRE WHEELS
on
FAIRCHILD MONOPLANES

AMERICAN aircraft manufacturers producing airplanes on increased scales of production have found through investigation and practice that Dayton Wire Wheels meet all of their technical and delivery requirements.

They are uniform in their high quality and pass all Government requirements. They can be delivered promptly according to specification.

The Fairchild Aviation Corporation now building the well known Fairchild Cabin Monoplane on a quantity basis naturally turned to
THE DAYTON WIRE WHEEL CO.
to fill their wheel requirements.

Dayton Wire Wheels FOR AIRPLANES & AUTOMOBILES

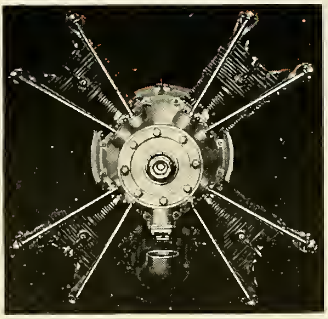
The fact that the Fairchild Company specifies the materials and parts advertised throughout this special section is a high recommendation, for the excellence of Fairchild products is well known.

Seventy-five Per Cent . . .

OF the commercial 'planes can profitably use a medium-power air-cooled engine. And here—in the Fairchild Caminez—lies the answer to this problem. Under development for several years, every detail was perfected, point by point, through extended testing of engines on the stand and in flight.

Now a 50-hour test, ending with a 27-hour non-stop run, has demonstrated the absolute reliability of this engine. It resulted in approval by the Department of Commerce —the first engine approval granted under the new regulations.

Ask any pilot who flew this engine —Ralph Lockwood of the Department of Commerce, pilots of the Curtiss Flying Service, of the Ludington Exhibition Co., or others —*all* enthused over the amazingly short takeoff (3-4 sec. in a Waco 10) and the fast climb resulting from the slow-speed propeller.



135 B.H.P. 1050 R.P.M. 340 LBS.

Price

$2480

F.O.B.

Fairchild Caminez engines are now in production in a modern factory equipped with every facility for efficient production of quality aircraft engines. Here is a real commercial engine with improvements of definite advantage found in no other engine.

A complete technical description, with installation drawings and power curves, awaits your request.

• •

Subsidiary of Fairchild Aviation Corporation. Sales Offices and Factory, Farmingdale, L. I., N. Y.

FAIRCHILD CAMINEZ ENGINE

CORPORATION

FAIRCHILD CAMINEZ ENGINE CORPORATION
FARMINGDALE, L. I., N. Y.

I am interested in knowing more about your engine.

☐ I do not own an airplane.

☐ I now own a......................airplane with a......................engine.

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Name ....

Address ....

FA

"LEARN TO FLY"

Flight Training Opportunities

(Continued from the July issue.)

BURDETT FLYING SCHOOL
Los Angeles, California

THE complete course of instruction, guaranteed to teach all the principles and the art of flying, costs $250. Instruction consists of: complete ground course of motor work, rigging, repairing and rebuilding, as well as the art of flying.

Burdett, the chief instructor, has been teaching students to fly ever since 1919.

Rooms can be obtained near the flying field at from $3.50 to $4.50 per week. A cafeteria restaurant is maintained on the field, the rates to students being very reasonable. There are also larger restaurants nearby.

Six ships are used of the following types: JN4Ds for training; for passengers, the Super-Swallows and the International Aircraft's ships.

There are 70 students enrolled now; three instructors. Over 70 students have been trained since starting.

The flying field is located at 94th Street and South Western Avenue, and is 1,500 feet wide and 3,000 feet long. A large, black tank is on the southern boundary line.

Burdett Air Lines, Inc., which operates the school, also maintains commercial air service.

MONTANA AIR SERVICE SCHOOL
Dillon, Montana

THE cost of instruction is $200. Instruction consists of ten hours flying instruction, motor work and one solo flight.

The school has been in operation since November 1, 1926. Living facilities for students are very good.

One Waco-9 plane is used for instruction. Nine students are taking the course at the present time with one instructor; four pupils have trained since starting.

The flying field is one mile from town. Transportation is furnished all students to and from field. It is a flat 80-acre field with emergency fields on three sides. A well-equipped hangar is on field and access to one of the biggest machine shops in the state is provided for all students and employees.

The Montana Air Service Company also operates a commercial flying service.

KELLER FLYING SCHOOL
Chicago, Illinois

THE course, costing $285, consists of fourteen hours dual instruction, solo, advanced flying and acrobatics; also a post-graduate course in night flying.

The school has been in operation for five years; Keller himself has been instructing for eleven years.

Twenty-two students are accommodated at one time; two instructors. 250 have been trained to date.

Board and room may be obtained at field for $12 per week.

Four ships are used. The school uses the Aero Club of Illinois flying field inside the city limits; one mile square; surrounding country open; searchlight and boundary lights for night flying. It is a U. S. air mail field with two factories and ten hangars.

A commercial flying service is also operated by Keller.

MILLER FLYING SCHOOL
Los Angeles, California

THE average cost of instruction is $300. The course consists of complete flight training including instruction in the care and maintenance of both the airplane and motor. Night classes are held every Tuesday and Thursday evening and the following subjects are taught: meteorology, air navigation, airplane structure and the study of aviation as a business.

The school has been conducted since 1924.

Students can obtain room and board near the field for $10 per week.

Two JN4D's are used for training. Two instructors are employed. Forty-two students, including a number of women, have completed the course and graduated from the school.

The field of the Burdett Air Lines, Inc., 1401 So. Western Ave., Los Angeles, is used for flight training. The main office and ground school is located at 8124 So. Western Ave. Miller Flying Service also conducts a regular commercial flying service.

Class now training at the Inter-Southern Flying School, Clearwater, Florida.

INTER-SOUTHERN FLYING SCHOOL
Clearwater, Florida

THE charge for instruction is $20 per hour for the first 10 hours and $15 per hour for time thereafter, including solo practice.

The course consists of the following ground instruction: rigging, application and functioning of controls, motor repair and care, theory of flight, meteorology and aids to navigation.

Flying instruction includes: dual and straight flying, turns, climb and glide, dual landings, and take-offs, 90 degree glide turns, climbing turns, figure eights, wing-over turns, wing-over eights, vertical turns, vertical eights, dual landings for the spot, dead stick landing, figure eights over pylons both 1600 and 800 feet apart, tail spins right and left; when student is competent to solo, dual cross wind take off and landings; F. A. I. test.

The school has been operating six months. Most of the students were winter visitors who are finishing their instruction in the north during the summer. Five local students have finished the school's training course.

There are sleeping quarters at the field for a few students; board and room can be had near the field.

Waco-9 planes are used for training.

Five students are in the present class; one regular instructor.

The 60-acre field is two miles east of center of town; level and has standard markers—wind cone on hangars at the northwest corner of the field and 300-foot circle at the center of field; flood lights will be installed by fall.

The Inter-Southern Air Service, operating the school, also conducts a commercial flying and sales service.

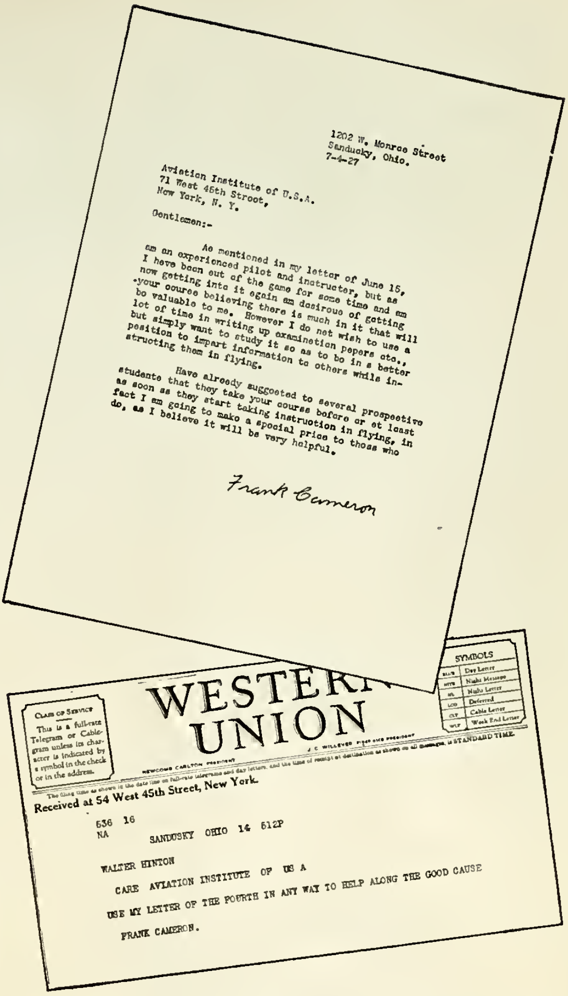
CLEVELAND AIR SERVICE SCHOOL
Cleveland, Ohio

THE average cost of instruction is $300; additional instruction is supplied at $30 per hour, or a plane for solo practice at $25 per hour. Instruction consists of: ten hours' practical instruction in the air; advanced instruction such as tail-spins, side-slips and cross-country flying. The course usually takes eight weeks.

Flying instruction is started with teaching the student the fundamental operations of the controls, then his instruction flights of from ten to forty-five minutes duration are started. Instruction is given with dual controls, using phones which make it possible for the student to receive verbal instruction at all times. Practical instruction is also given in the construction of planes; motor overhaul; lectures on nomenclature, aerodynamics, navigation and instruments. A diploma is given and students have the opportunity to qualify for pilots' license.

Along with student training, passenger flights, photography and advertising are also done. (*Continued on page 170*)

Pilot-Instructor Turns to the Institute for Further Study



1202 W. Monroe Street
Sandusky, Ohio.
7-4-27

Aviation Institute of U.S.A.
71 West 45th Street,
New York, N. Y.

Gentlemen:-

As mentioned in my letter of June 15, am an experienced pilot and instructor, but as I have been out of the game for some time and am now getting into it again am desirous of getting your course believing there is much in it that will be valuable to me. However I do not wish to use a lot of time in writing up examination papers etc., but simply want to study it so as to be in a better position to impart information to others while instructing them in flying.

Have already suggested to several prospective students that they take your course before or at least as soon as they start taking instruction in flying, in fact I am going to make a special price to those who do, as I believe it will be very helpful.

Frank Cameron

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WALTER HINTON
CARE AVIATION INSTITUTE OF US A
USE MY LETTER OF THE FOURTH IN ANY WAY TO HELP ALONG THE GOOD CAUSE
FRANK CAMERON.

YOU men who are in Aviation will be interested in Mr. Cameron's letter—and in his point of view. It is sound. He is wise to seek to "be in a better position to impart information to others, while instructing them in flying."

It is always the wise men who seek to improve. They are the men who get ahead—who rise above the crowd, in more ways than one.

The Aviation Institute course of instruction is so clear, so simple that any man of average intelligence, who never before has given any study to Aviation, can master it easily at home, in his spare time. Yet it is so thorough in everything that a man needs to know of the fundamentals and principles of this great, new, growing industrial field that even experts turn to it for further study, to advantage.

There is a great similarity between the present status of the Aviation industry and what the automobile business was in its early stages. Aviation is taking the whole world by storm. It is expanding rapidly, in every direction. Notably in its commercial activities. Hundreds of great, new fortunes will be made. You will see men apparently get rich over night.

But Aviation is suffering from growing pains. Its opportunities, its possibilities are too many, too large to be met by the few trained men we have in the business. Everywhere leaders are hungry for men who know.

Most of those fortunes that are to be so breathlessly gained will go to the men who get trained now—or broaden their present knowledge. Successes will come to the fittest. The plums will be seized by men who learn how to take them.

You ambitious men who are now in Aviation—you pilots, commercial flyers, instructors—you inspectors, riggers, mechanics—look into what the Institute can do to help you. Investigate the course. Send the coupon for literature and prospectus. Feed your ambition with the kind of fuel that outdistances competition—the fuel that is expert knowledge in every angle of your business.

Lieut Walter Hinton, First Trans-Atlantic Pilot, N.C.4 fame, President Aviation Institute

And you wide-awake men who wish to enter Aviation—who see that the need for trained men is a crying need—who realize the glorious future here—let Lieut. Walter Hinton, who blazed the trail across the ocean with the N.C.4, and his staff of experts guide your instruction.

The Aviation Institute Course teaches you everything you need to know, right up to the point of actual flight instruction in the air. When you have graduated from the Institute and received your credentials, you are ready for your opportunity in Aviation.

In cooperation with the Institute, final flying instructions are given at our own flying field here in Washington or at other fields in all parts of the United States. Five to ten hours with an instructor, and you can fly alone.

There are thousands of interesting facts about Aviation in our new free book. Send for it now. Get all the information about the Institute Course and the way it leads to Opportunity. Mail the coupon.

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1115 Connecticut Ave., N. W. *Suite 78* **Washington, D. C.**

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You may send me without obligation a Free Copy of "Aviation and You."

Name..............................

Age (not under 16)....................

Street..............................

City...................State........

Students and instructors of the Calumet Flying School, Gary, Indiana.

Briggs Flying School
Memphis, Missouri

THE average cost of instruction is $6 to $7 per hour, which includes gas and oil. Instruction consists of regular flying with instructor,—take-off and landings, forced landings, stalls and solo flying.

The school has been operated for three years.

Board and room may be obtained for $8 per week.

Three ships are used: Canuck, Standard with OX5 motor and a short wing Standard with OX5 motor.

Two students are training at present, twelve have been trained; one instructor.

The field is a municipal flying field of 50 acres, situated one mile east and one-half mile north of the courthouse square. It is level with no obstructions except on the north which is telephone wire, tree and farm buildings.

Southwest Aviation School
Oklahoma City, Oklahoma

A COURSE of instruction, consisting of building and rebuilding planes, dead stick landings and spirals, and three solo flights, is given for $250. It usually takes from 10 to 15 hours actual flying time to complete a student for solo flying. This does not include advanced flying or stunts.

The school has been operating under the name of the O. K. Airport for the past three years. It has now been incorporated and changed to the Southwest Air Plane Sales Corporation.

There are three instructors on hand at all times. About thirty students have been trained. Students can board in Oklahoma City for about $10 a week.

At present they are operating on their own field, two and one-half miles from the State Capitol Building, but they have contracted for a hangar and shop 60 feet by 75 feet, and have purchased one and one-half acres of ground adjoining the Municipal Field at Oklahoma City into which they will move as soon as the shop and hangar are completed. The Municipal Field is now being drained and over $12,000 being spent on improvements.

The company owns and operates three Eaglerock airplanes, and have the state of Oklahoma and the Texas Panhandle as territory under the Alexander Company.

Calumet Flying School
Gary, Indiana

A COMPLETE flying course is offered for $200. A certificate of flying is given upon graduation and the school assists in getting a government license and a position. If one desires to work for part of tuition, the school will accept $85 cash, and the balance of $115 in work—construction work in the Calumet factory for fifty cents per hour.

Board and room can be obtained for $8 per week.

The present school, an organization of older schools, has been in operation since January, 1927. There are 22 students at the present time; 2 instructors. Five pupils have graduated.

The field is at Merrillville, one mile from Gary, on a cement highway with good transportation to town, and only 30 miles from Chicago, Ill.

Calumet Air Transport Co., Inc., operator of the school, also manufactures commercial planes and does commercial flying.

What Do You Know About Airplanes?

A FEW years ago men had to learn about aircraft from personal, costly experience. They had no one to guide them—no one to point out mistakes when they were made—and therefore years were spent learning what takes months now.

THOROUGH — PRACTICAL TRAINING

Today the American School of Aviation offers you these long years of experience and knowledge, which cost millions to acquire, in their new and fascinating Home Study Course in Practical Aeronautics which has been highly endorsed by prominent aviation authorities.

WRITE TODAY

No matter whether you have worked with airplanes all your life or are just beginning in the industry you owe it to yourself to send for a complete and detailed outline of this training and our new and interesting free book, "Opportunities in the Airplane Industry."

American School of Aviation
Dept. 277C, 3601 Michigan Ave., CHICAGO, ILL.

LEARN to FLY

You Fly by Flying.

1000 Ambitious Young Men WANTED

THE SWEENEY SYSTEM *of Practical Airplane Mechanics*

The Sweeney System

first prepares a student by intensive practical work on motors, building, recovering wings, rigging and all details of construction, repairing and handling. This is called ground school work. To show you the quality of the men who teach you, look at Spencer and Wimer for instance. Spencer was an army pilot and has been teaching and doing commercial flying since 1917. Wimer is a college man, went overseas, was with the 1st Air Park as an observer, spent over 200 hours in the air and since the war has been with two big aircraft corporations.

Learn to Fly!

Aviation is no longer a mystery—no longer a hazard; no, it is a business, growing greater and more important; you can qualify as a mechanic, engineer, repair man, builder or a pilot.

opens up a world of opportunities for young men. The **Sweeney System** has no planes to sell, and sticks strictly to teaching both ground work and pilotage. Sweeney Airport is one of the best and safest fields in the U. S. All the resources of this **Million Dollar School** insure you the best, most practical instruction. Mechanics earn $50 to $150 a week. Flyers, up to $500.

The Sweeney System

is divided into two parts. **First:** You are thoroughly taught in the ground school. This fits you as an aviation mechanic. You can build your own plane and do anything required in aviation mechanics and construction and repairing when you have finished this work. You are thoroughly taught motors, etc., and work with thousands of dollars worth of new material, and all types of engines.

Secondly: After completing this work if you want to be a pilot you take ten hours of flying. Now when you understand that two to seven hours is all the average man needs to learn expert flying you will appreciate what ten hours in the air under skilled men will do for you.

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THE INTERLOCKING EQUISIGNAL RADIO BEACON

By

Captain Wm. H. Murphy, U.S.A.

As radio beacons of various types have been and will be used more extensively in commercial aviation a description of this type of beacon, developed by the United States Army during the last few years, is of timely interest. It is assumed that the various directional effects of receiving sets operated with loops are appreciated; that is, the set will receive best from stations toward which the loop is pointing and stations at right angles to this position will not be heard at all. The change from best reception to zero reception is of course gradual and if the intensity of the signal were plotted in proportion to the intensity of signal a figure eight or cosine characteristic of the form shown in Fig. 1 would be obtained.

If a similar loop antenna is connected to a transmitting set, the loop will radiate most strongly in the direction in which it is pointing and not at all at right angles thereto. Therefore a receiver moved at a constant distance and in a circle around the transmitter will pick up the signals sent out most strongly when located in the plane of the loop, the signals then decreasing until they become inaudible after traveling around one quarter of the circumference, increasing thereafter until again arriving in the plane of the loop. Obviously the same results would also be obtained if the loop were turned and the receiver remained stationary. Fig. 1 indicates the signal strength in either case, so long as a loop is being used. Suppose we now employ two loops at a certain point, set up at a definite angle with respect to each other, and let one loop point 30 degrees west of north, the other 30 degrees east of north as shown in Fig. 2; we can then say the two loops differ in position by an obtuse angle of 120 degrees. If a receiver on the ground or in an airplane were located at the point 33 corresponding to a bearing of 330 degrees then signals from the left loop would be at their maximum while signals from the right loop would be half as strong. A Morse N or —. sent out by the left loop would be much stronger than a Morse A or . — sent out by the right loop, the loops transmitting alternately. Suppose next that our receiver were located at the point 21, corresponding to 210 degrees, then the Morse A signal from the right loop would be louder than the Morse N from the other loop. Suppose finally that the receiver, owing to the stronger A signals being received, were moved northward until the point 27 were reached (that is until it was directly west of the transmitter), then on comparing the two figure eight characteristics we would find that the two signals would now be equally strong as the lines ai and aj are of the same length.

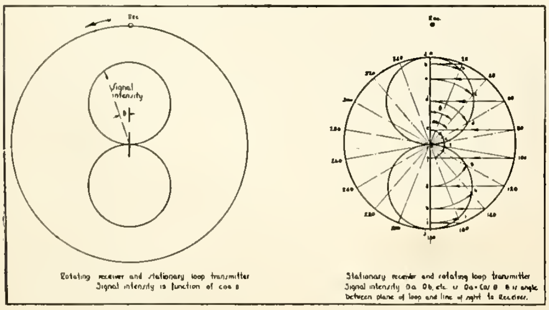
It is easy to visualize just what signals an observer in an airplane would hear louder if he were north or south of the true course and to know what direction to follow in order to arrive on the true course and to remain on this course. The more accurately the pilot can determine the equality of such alternate signals the more nearly true a course can he fly. No apparatus is needed other than a receiving set capable of being tuned to the wave length of the signals and an antenna.

Before going further into the matter of accuracy it may be well to mention the effect of cross winds in general flying. Should a pilot be flying directly west from the home station "a" then his compass would indicate this fact only if there were no cross wind. Should there be a wind from the north while the airplane was being headed directly west then the plane would drift in a southerly direction. If the drift were observed by noting the ground or determined by the use of a drift indicator then the plane would have to be headed somewhat into the wind in order to keep to a true course. The magnetic compass would therefore not indicate 270 degrees but possibly 290 and this reading would have to be maintained until a change in wind intensity or direction took place. In any case a change of wind will have to be corrected for regardless of the type of compass used. This presupposes that such changes can always be detected which is not always the case as flights may be made over cloud levels, in fog, or at night over water and with covered sky. Errors can therefore not be avoided and as the errors due to drift are cumulative, large deviations from the true course cannot well be obviated at times. There is the further possibility of making corrections by means of proper solar or astronomical observations but only if the atmosphere is favorable. Such corrections must also be made during long flights as the compass bearing must in general be altered as the flight progresses if a great circle flight is to be made.

The equisignal line is a great circle line and is of course not affected by wind. A pilot following such an indicated line will therefore automatically compensate for drift, will entirely avoid the above mentioned cumulative error and will automatically fly the shortest route between two terminals without any calculations whatsoever. As a matter of fact flights made by means of the beacon over cloud layers were entirely accurate and were in turn used to determine the wind drift by the simple expedient of noting the change in earth inductor controller setting required in order to bring the indicator to zero. The beacon and compass can and should supplement one another although flights without the aid of compass or map are entirely possible and practicable. It is further possible for the pilot to leave the true course in order to avoid storm areas or to follow through mountain passes and then to return to the true course again and this has been done frequently.

Reverting to Fig. 2 it will be seen that not only is ai equal to aj, but there is also an equality between ad and ae, ab and ab, and ag and ag. It would therefore be possible to make flights from or toward the beacon loops north, south, east, or west. The accuracy with which an observer can determine equality or inequality of signals is not perfect. At worst it may be about 1.3 to 1, provided static interference does not make it still poorer. This means that an inexperienced observer may not note an inequality until one signal is 30 per cent. louder than the other. Assuming such a value then the more rapid the change in intensity the narrower would the doubtful zone become. This change is rapid at i, j, d, and e and slow at b and g. Actual checks and calculations show that with loops differing in position by 120 degrees the zone is about 8 degrees wide near the former points and 26 degrees near the latter. It is obvious therefore, that in actual use the zone or rapid change or the minimum equisignal zone is preferable even if a sacrifice in signal intensity and range must be accepted.

The question may be asked just how flights in other directions could be made, this is a simple matter for if a flight were planned along the 330 degree bearing it



Rotating receiver and stationary loop transmitter
Signal intensity is function of cos θ

Stationary receiver and rotating loop transmitter
Signal intensity Oa. Ob, etc. is Oa = Cos θ θ is angle between plane of loop and line of sight to Receiver.

Figure 1 (left)

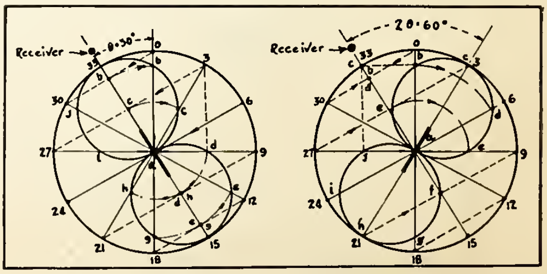
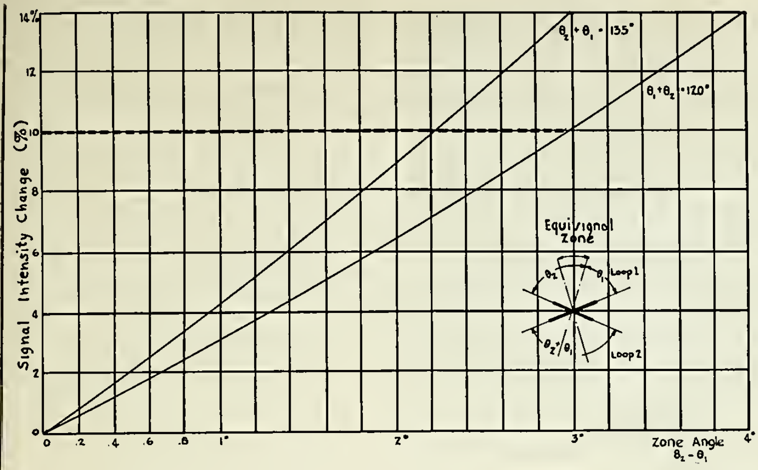


Chart showing characteristic obtained by rotating receiver about stationary transmitter or by rotating transmitter loop about its axis.

Figure 2 (above)



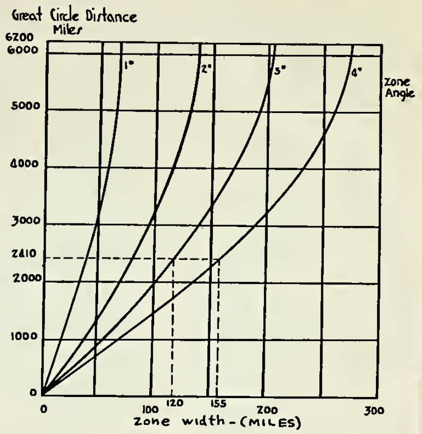


Figure 3 (left) and Figure 4 (above)

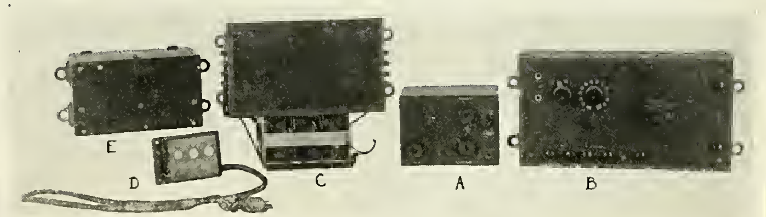


Figure 5. The elements of the automatic visual device for determining direction.

would only be necessary to turn both loops 60 degrees to the right or in a clockwise direction from the position shown in Fig. 2.

The accuracy of determining changes in signal intensity being most important it was necessary to devise aids for the observer. At first alternate parts of the two Morse signals were loosely interlocked so that when equality of signals had been obtained an X or — . . — would be heard. This made comparison easier and eliminated a physiological effect which in some cases made the second of two equally strong signals actually appear weaker. The result was that differences in intensity of 14 per cent. could now be determined which meant a reduction of the equisignal zone from 8 to 4 degrees. To eliminate guesswork the interlocking was made closer so that the spaces became of equal length to the dots. The result was that when equality had been obtained the signals merged into a new signal dash or T which rapidly wavered and then dissolved into a dash dash and then dash dot on one side and into a dash dot and then dot dash on the other. The final result was that an intensity change of 10 per cent. could be determined which with the loops in question means an angle of 3 degrees width.

There is a further means of sharpening the zone which is apparent when it is realized that the width of the zone depends on the rapidity of change of signal strength. The method is to increase the angle between the two loops; but this is again limited by the resultant weakening of the signals to be employed to about 135 degrees which, however, results in a reduction of the equisignal zone to 2.2 degrees.

In general we were satisfied to operate with 120 degree loop spacing and with the 3 degree zone. Fig. 3 shows the zone width obtained for different signal intensity changes, while Fig. 4 shows the width of zone in miles as functions of distance up to 6,200 miles or a quarter of the earth's circumference. Beyond this distance the zone again becomes narrower owing to the curvature of the earth. In any case it should be noted that although the zone is 3 degrees wide the actual maximum error is one half of this angle as the true course bisects the zone. If the course is set along the edge of the zone or if the pilot knows the width of the zone then it is entirely possible for him to determine the true course with an accuracy of one half of one degree.

In order to aid the pilot still further an automatic visual device was developed which responded to the two characteristic signals and the combination or dash signal in such a manner as to operate relays which in turn would light a red, a green or a white light, thus indicating to the pilot whether he was to the right or left of the course or within the equisignal zone. This device had an accuracy of possibly 14 per cent. but had the fault that it required more delicate parts as well as greater power and that static noises which could be differentiated by the ear could not be differentiated by the relays thus causing occasional erroneous signals. The elements of the device are shown in Fig. 5 where A is the tuner and B is the amplifier. These two units suffice for aural reception, A being mounted in front of the pilot or observer while B is mounted in the fuselage. C is the box containing the relay and E is the box in which the contactor and additional relays are located. Both of these boxes are also placed in the fuselage while D, the signal device, is placed in front of the pilot.

In actual practice one beacon would be located at each terminal. In this way the effect of increasing width and possibility of missing the far terminal would be avoided and the power required at each beacon would be reduced so that less interference would be created. Referring again to the need for rapid changes in signal intensity without waste of energy and with minimum interference, two beam transmitters could be employed. This would be done if only one route were of interest at a terminal such as a transoceanic terminal. Where several routes converge at one point, as at Dayton, this would not be possible with the wave lengths employed. Even rotatable loops of the size required were impracticable and for that reason a Bellini Tosi antenna was employed there, an antenna system which is itself fixed and rigid but which by means of a goniometer coil can induce various percentages of current in its two loop elements thus giving results equivalent to those obtained by rotatable loops.

Fig. 6 shows the antenna employed with

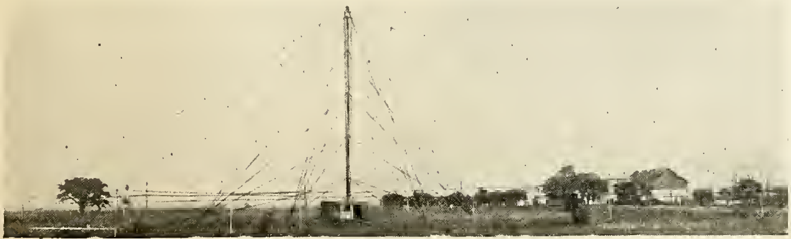


Figure 6. The directional antenna with its 80-foot pole and guy wires.

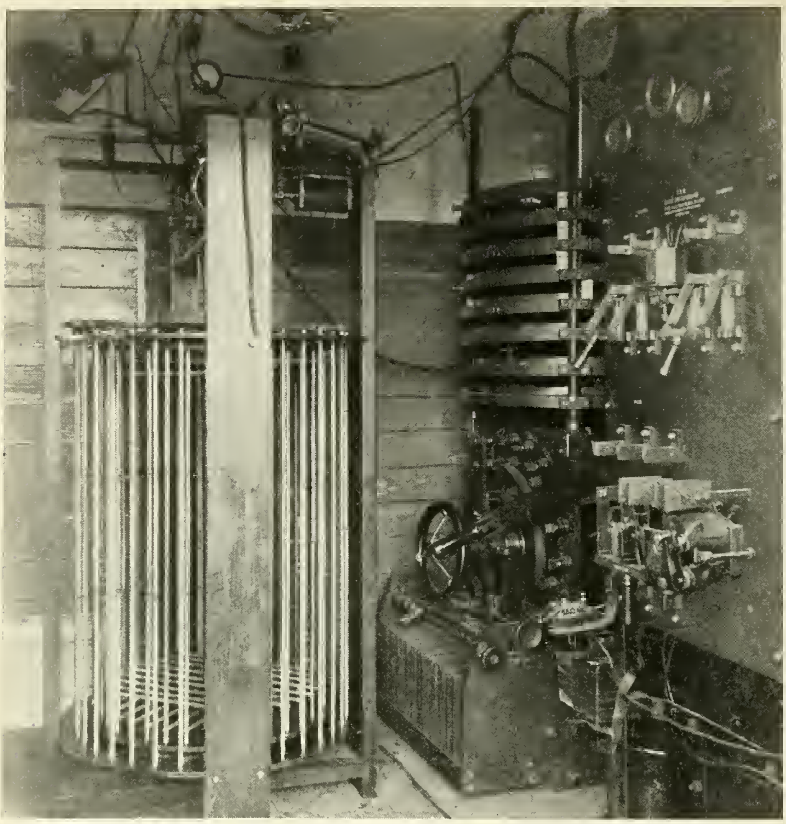


Figure 7. The goniometer and power equipment for signal transmission.

its 80-foot pole and guy wires; Fig. 7 shows the goniometer and power equipment, and Fig. 8 shows the keying device and loop relay. The airplane used in many of the test flights is shown in Fig. 9. The antenna weight of pear shape is visible below the fuselage at the end of the fairlead which appears as a rod directly under the streamline formed landing light. A close inspection will also show the shielding needed on the magneto, the distributor and the ignition wiring necessary for satisfactory reception.

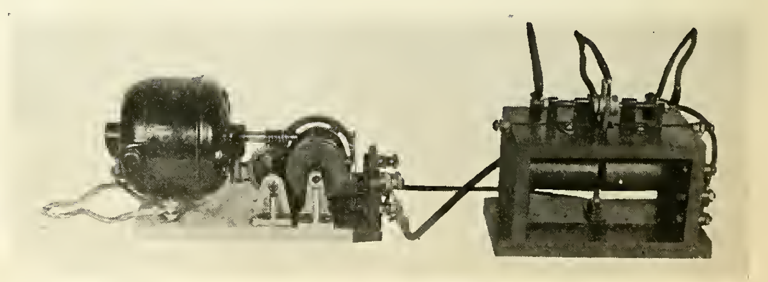


Figure 8. The electrically operated keying device and loop relay.

The beacon itself was developed in its present form during the years 1923 to 1925; although the device was conceived in 1918 but in a slightly different form, namely, both as a stationary and as a rotating beacon of the Telefunken type employing a Bellini Tosi antenna system instead of the series of loops used by Telefunken and incorporating the interlocking signal effect of Scheller patented in 1907. Prior to 1923 an equisignal device which sent out dashes alternately from two differently orientated fixed loops had been experimented with jointly by the Army and the Bureau of Standards, this device being similar to the Marconi and Round systems patented in England in 1909. The latter method had several faults: first, that the beacon signals could only be varied over a narrow zone owing to the fixed position of the loops employed. A patent by Marconi and Price in 1912, however, embodied the use of a Bellini Tosi antenna system which would enable balanced signals to be sent out in any direction. The second fault was the difficulty of actually determining the equality of two signals owing to the physiological effect mentioned before. The third fault was due to the fact that dashes were used which made it impossible to determine at times to which side of the observer the equisignal line was to be found and this was especially the case if the observer had for some reason departed so far from the line that one of the two dash signals had become entirely inaudible. Bearing these matters in mind it was immediately decided to return to the originally planned system using a Bellini Tosi antenna, two different characteristic signals which could be interlocked, and the possibility of sending out rotating signals for general navigation or of fixed beacon signals along any desired bearing for the use of commercial center terminals where various routes might be desired and where flights in any direction might be required.

The study of the beacon zones was at first made on the ground and then in short flights of twenty to forty miles. The flight distances were then gradually increased to 200 miles, at which time the close interlocking of signals was developed which produce T signals and zones of 3 degrees width. At that time the flights were made by the pilot in such a manner that only the T signal was heard or a zig-zag course was followed until the A and N signals became clearly defined. In this case an observer with an aerial map was employed to carefully mark the route followed. Flights of this type were made to Rantoul, Ill., Peoria, Ill., Detroit, Cleveland, Moundsville, W. Va., and numerous other points. Later, longer flights were made by means of the beacon only, the beacon being set entirely by means of an accurate map. Such flights were made to Louisville, Nashville, St.

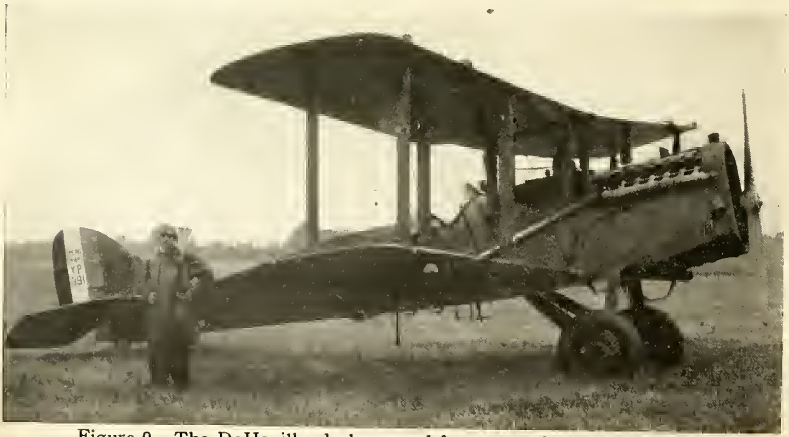


Figure 9. The DeHavilland plane used for many of the test flights.

Louis, Kalamazoo, etc. Occasionally it was found that slight errors were met with so that the procedure before making a distant flight was to fly accurately by map for the first twenty miles maintaining radio telephone communication with the beacon and in fact checking and controlling the setting of the course while in flight. In this way errors were overcome and the pilot had the double assurance of the accuracy of the indicated course. Another method was to have an observer at the distant point listed to check the bearing, the equisignal zone being shifted in one degree steps according to a prearranged schedule. A flight made by Naval flyers from Washington by means of the beacon was prepared by the former method at the home station.

Flights made under ideal conditions naturally give good results and for that reason flights were also made over entirely unknown territory with bearings unknown to the pilot, over Lake Erie, over heavy fog areas or cloud levels, and finally through heavy fog. Tests of this type gave conclusive results and the last mentioned test made through an abnormally heavy fog brought the airplane directly to the flying field after traveling twenty miles over the tree tops.

In this connection it might be mentioned that the beacon will prevent airplanes from colliding in the air so long as planes traveling in one direction will follow, let us say, the N edge of the zone while planes in the other direction follow the A edge of the zone. In short that planes keep to the right while flying in the zone in either direction.

It was stated before that beacons would in practice be operated at both ends of a route. Very fortunately a flight of this type could be made as the Air Mail service obtained a beacon from the Air Service laboratory which was erected at Monmouth, Ill. Two airplanes from Dayton then flew to Monmouth making use of the Dayton beacon as far as Peoria. The Monmouth beacon was then put into shape and was directed on Dayton after which, and with both beacons operating, a perfect flight was made back to Dayton.

The beacon can also be used at regular intervals for the transmission of information of interest to the pilot. In some of our long distance flights toward Dayton, weather reports were of great value. In general they were brief and contained information such as the height of clouds at the home terminal, ground conditions, ground wind direction and direction and intensity of wing at various altitudes. Information of this type is important because if the ceiling is high the flight may be made with favorable winds at a definite altitude and above the clouds without fear of being forced to land in a fog. If, on the other hand, a fog should be reported, the pilot may find an opportunity to come down to a safe level before entering the fog or can arrange to make a landing at some nearby flying field at which there may be no fog. Such weather reports or other reports can be made by telephone or telegraph on the same wave length as the beacon wave so that the pilot need not disturb the setting of his receiving set.

THE VALVES USED IN LINDBERGH'S PLANE

INTERESTING in design and as one of the contributions of automobile parts makers to aero-engine ruggedness are valves used in the motor of Lindbergh's New York to Paris plane.

The valves, from the Cleveland plant of Thompson Products, Inc., are of the cupped head design with a hollow stem, made from a solid forging. The stem is filled with a salt solution to promote more rapid dissipation of heat from the head to cooler portions. Advantages of the cupped design, it is said, are greater strength and faster passage of intake and exhaust vapors because of the more gradual curve made possible under the head. Another desirable feature of the hollow stem is that it permits a larger diameter and more wearing surface in the guide without appreciable addition of weight. Seat, stem and stem tip are all of different hardnesses, adapted exactly to operating conditions. The valves have a "burnished finish" all over.

During Lindbergh's 33½ hour flight across the Atlantic each of the eighteen valves in the 9-cylinder Wright motor operated continuously with the center of the head red hot. Each valve opened and closed 12 times per second or 1,447,200 times during the trip, and withstood a similar number of 800-pound explosive shocks. For every valve this is the equivalent of a laborer striking fifty 200-pound blows per minute with a 16-pound sledge hammer for two and a half months.

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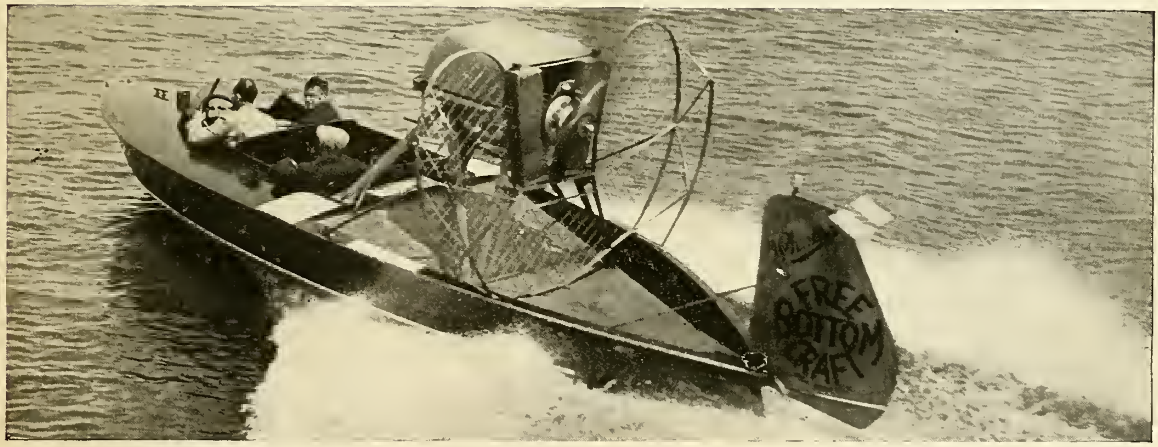

Air propelled . . . air steered . . . the Whistler has nothing on the bottom but paint and takes you safely over marshy bays, treacherous inlets, shallow rivers and uncharted lakes. Rides and drives like a car . . . easily . . . vibrationless . . . at better than 30 m.p.h. and with the cockpit clean and dry. Built by makers of seaplanes for the U. S. Navy, and dependably seaworthy. Equipped with the reliable OX-5 motor; auto-type muffler; electric self starter. A limited number available for prompt delivery. Write for particulars.

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MANUFACTURE OF AIRPLANES

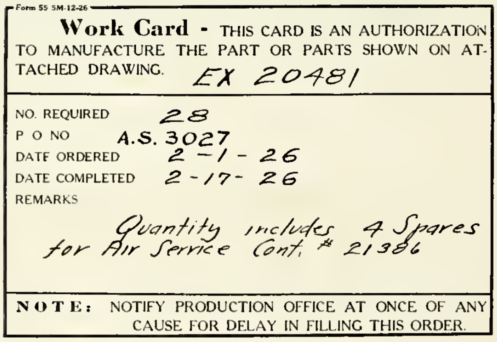
Karl H. White, B.S., M.E.

THE subject of airplane manufacture is so vast that only a brief survey of the many points entering into the actual construction of the most common types of airplanes manufactured on a small production basis can be given in this short article. The subject will be taken up from the time that drawings are released from the engineering department to the production or planning department and it will be carried through to the finished airplane, ready for flight or for crating prior to shipment.

The first set of drawings which are received by the production department, if the engineering department has properly handled its part of the work, will be drawings of those parts of the airplane which are required first in the actual set up or construction work. As the fuselage, or body, in most types of planes is the most complicated part of the plane and contains the majority of the equipment installed, it should receive first attention.

Fuselage

The fuselage ordinarily consists of longerons, struts and wires assembled into a frame work of the shape desired for that particular design of airplane. Forms or jigs are set up in the final assembly department from preliminary line drawings to facilitate the erection of the fuselage and also to insure its interchangeability with other fuselages. Work orders (see illustration at left) are issued to the various shop departments for the fabrication of parts in the order that these finished detail parts are to come through for efficient assembly. A route tag (see illustration) accompanies each order stating just what should be done with each piece as it is fabricated.



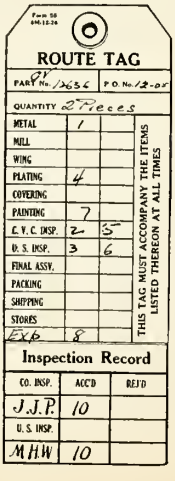
Form 55 5M-12-26

Work Card - THIS CARD IS AN AUTHORIZATION TO MANUFACTURE THE PART OR PARTS SHOWN ON ATTACHED DRAWING. EX 20481

NO. REQUIRED 28
P O NO A.S. 3027
DATE ORDERED 2-1-26
DATE COMPLETED 2-17-26
REMARKS
Quantity includes 4 Spares for Air Service Cont. # 21386

NOTE: NOTIFY PRODUCTION OFFICE AT ONCE OF ANY CAUSE FOR DELAY IN FILLING THIS ORDER.

The parts first required for assembly are the longerons or longitudinal stringers which form the corners of the body. The forward portion of the longerons are ordinarily made of ash—in wooden construction—and are spliced to spruce after members. It is this forward portion of the body which gets the most strain. Ordinarily it not only supports the pilot, passengers, engine, in single-engined planes, fuel and oil tanks and other equipment, but gets the shock on landing and, in types of planes for military purposes, has to take catapulting and arresting loads. These unique military planes are shot from a battleship by a powder charge and are capable of landing on the deck of an airplane carrier by means of arresting apparatus which transmits very high stresses into these forward members of the fuselage.



Form 56 5M-12-26

ROUTE TAG

PART No. GV 12636 | P. O. No. 12-05

QUANTITY 2 Pieces

METAL	1	
MILL		
WING		
PLATING	4	
COVERING		
PAINTING	7	
C. V. C. INSP.	2	5
U. S. INSP.	3	6
FINAL ASSY.		
PACKING		
SHIPPING		
STORES		
Exp	8	

THIS TAG MUST ACCOMPANY THE ITEMS LISTED THEREON AT ALL TIMES

Inspection Record

CO. INSP.	ACC'D	REJ'D
J.J.P.	10	
U. S. INSP.		
MHW	10	

The struts with their fittings which tie the longerons together are next required. Tie rods strung diagonally through the structure are then assembled and drawn up snug to bring the fuselage into proper alignment and shape. Hinges for the main wings and attachments for tail surfaces and landing gear are all jigged in place to assure interchangeability of surfaces or landing gear. This is quite essential in order that spare parts may be used in case of damage or wearing out of parts on the original plane.

The fairing and cowling form the last part of fuselage assembly. The purpose of fairing is to obtain an outside shape which will give the least resistance to the airplane when in flight. It usually consists of light longitudinal stringers of metal or wood attached to shape forming skeleton frames at various intervals along the body. Fabric is applied on top of the fairing and doped and finished similar to the method described later under Wings. Women often apply the fabric and usually are much more skillful with this part of the work than men. The cowling at the forward portion of the body is assembled after the power plant is installed. It usually consists of sheet aluminum formed to cover the engine or shaped around the engine, extending back in smooth lines to the fabric fairing. Cowling around cockpits is usually manufactured from aluminum and is always padded around the cockpit openings with upholstery to safeguard the occupants in case of a rough landing. In cabin type planes, the cowling forms over a large open space or room in which chairs are installed for seating of passengers.

Windshields and all other glass employed in aircraft construction is generally "Triplex" or "Safety" glass which will not shatter under the heaviest of blows. It is made up of three layers of glass glued together with a non-breakable transparent sheeting between each layer.

Wing and Tail Surfaces

Wing and tail surfaces must be started after the fuselage is under way. Wing beam stock—in the case of wooden beams—must be carefully selected and dressed down to the approximate finished size and allowed to stand so that there will be no further shrinkage or swelling after they are finally shaped to go into the wings. Ribs must be started in the wing department. Jigs for the assembly of wooden ribs are necessary to insure the proper contour or shape of the wings. On this to a great extent depends the amount of lift, speed, or efficiency which is obtained from the airplane. Rib contours are carefully checked with jigs or fixtures which fit over the top and bottom edges or surfaces. They are also carefully inspected for workmanship. It should be remembered that the weight of the entire airplane is transmitted through these ribs to the wing beams and thence to the body or fuselage in which the majority of the weight is carried. The metal fittings in the wings necessary for strut and wire attachment must be followed through the metal department in order that they will be on hand when the ribs are ready to be assembled to the beams. It depends on the particular design of the wing whether the ribs may all be attached to the beams and the fittings assembled afterward or whether it is necessary to attach certain fittings before some of the ribs can be put in place. If even

(*Continued on page 178*)

RUSSELL LOBE PARACHUTE

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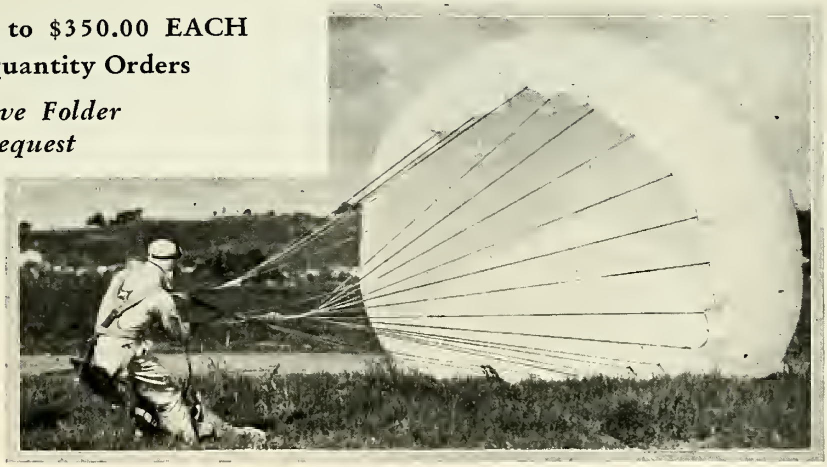

RUSSELL PARACHUTE COMPANY

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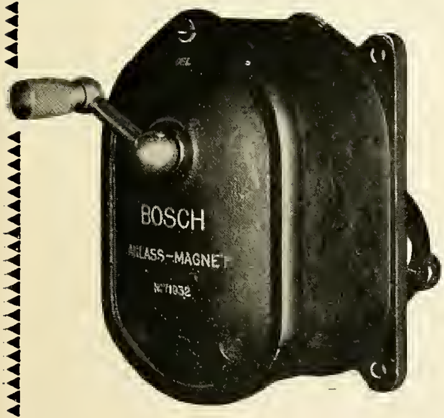

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WITH OUR BOOSTER MAGNETOS, GENUINE BOSCH, POWERFUL, LIGHT, EFFICIENT, REMOVABLE CRANK HANDLE.

INSTALLED IN A FEW MINUTES ON ANY AIRPLANE OR BOAT.

$15.00 COMPLETE

Air Transport Equipment, Inc.

CARLE PLACE, L. I., N. Y.

MANUFACTURE OF AIRPLANES

(Continued from page 176)

one small part is missing the completion of a whole wing may be held up, thereby disrupting a production schedule which may have been otherwise carefully planned.

After the framework of the wings has been completed, electric wiring for navigation lights, control cables or linkages, instrument tubing, such as air speed tubing, bonding for radio installation, etc., must be installed before the wing is covered with fabric. The bonding of airplanes equipped with radio sending and receiving apparatus is an important feature for observation type planes and should be given careful attention if good results are to be obtained. The purpose of bonding is to increase the electric conductivity and obtain equal potential throughout the plane. This is affected by connecting all metal parts in the airplane together with strip brass or copper.

After inspection of the finished framework and just before covering, the wings are attached to a jig simulating the attachment on the body to make sure that they will assemble properly in final airplane set up. The wings are then covered with a good grade cotton fabric sewed to the ribs and doped to draw the cloth tight and then enameled and sometimes varnished as a final coat. The dope is either brushed or sprayed on with an air gun. Spraying is much faster and applies a more even coating of dope to the fabric but is not economical enough to warrant spray gun equipment except on fairly good size production orders. In due time, with the increase in size of production orders for aircraft, the hand doping method will no doubt be discarded altogether and be replaced by the spray gun. In the automobile industry we do not find painters hand brushing the finish on production automobile bodies; on the contrary, we see them spraying on the entire finish except for final striping.

The tail surfaces consist of the stabilizer, elevator, fins and rudders. Tail surfaces are often made entirely of metal at the present time, although wood construction and a combination of wood and metal is still employed to a great extent because of a saving in weight. Duralumin is extensively used while steel tubing is still found in some of our most modern planes. The fabrication of tail surfaces should run along parallel to the wing assembly as they are needed at about the same time in the final assembly of the airplane. The stabilizer and fin attachments to the fuselage are checked on jigs prior to applying the fabric covering to insure proper attachment at final assembly and to obtain interchangeability for servicing. Control attachments receive special attention by the inspectors. It is interesting to note here through how many hands a part must ordinarily pass before it is finally accepted as satisfactory for use on the airplane.

Inspection

The "floor inspector" keeps tabs on each piece of wood or metal which is being used by the worker in the fabrication of parts for the airplane. He watches the workers' methods and does not permit any methods of manufacture which might damage the part being made and which might be overlooked by a busy foreman or not be detected by casual observance. When the workman has completed a part, it is delivered to the regular inspection department, where, with the use of special instruments it undergoes a thorough examination by competent men whose duty each day, in addition to checking dimensions to insure proper assembly later on, is to safeguard the company's interest by not allowing faulty parts to accidentally get through and be assembled into the finished airplane. In the case of steel parts, after preliminary inspection, the pieces are sent through a rust proofing process such as galvanizing a cadmium plating and then returned for further inspection. It is much easier to detect certain imperfections after plating than before. The metal parts are then enameled or painted, the wood parts finished by varnishing or painting and routed through by the route tags to the stock room or final assembly.

Periodic inspection is made during the assembly of the airplane, the object being to insure that each part is assembled in its proper place in the proper manner and that every part is securely locked in place. Standard blank inspection sheets which are attached to every large assembly such as the fuselage or wing are signed at certain intervals during construction to make certain of the proper checking of each step in assembly before it may be covered up by a later installation of parts. In aircraft construction no chances are taken in regard to the possible loosening of parts. Springs and other non-positive devices are never used in places of importance but are supplanted by other means which are fool proof and positive in their action. On airplanes produced under government contracts every part and step in manufacture is subject not only to company inspection but also to rigid inspection by government specialists.

Landing Gear

The term "landing gear" includes either a wheel type landing gear for land airplanes or float type gear for water type planes. Airplanes having a hull which is arranged for pilots, passengers, equipment, etc., are known as flying boats and here the hull also acts as a landing gear.

Wheel type landing gears are ordinarily made of wood or steel tubular struts with a steel tube axle for mounting the wheels. The axle in some cases connects directly across between the two wheels while in the later types of landing gears it is split, each half being bent up and attached to some part of the fuselage structure. Axles are usually manufactured from a high grade nickle alloy steel with a tensile strength of 180,000 lbs. per square inch or even higher. The ends to which the wheels are attached are ground after heat treatment to a diameter suitable for a free running fit in the bronze bushings supplied in the standard airplane wheels.

The strut which takes the majority of the shock in landing is in the later type airplanes, an oil pneumatic strut consisting of oil and air chambers so designed that the shock will be absorbed and yet not create a rebounding effect which will toss the airplane back into the air. Rubber discs are sometimes employed in the strut to absorb shock in place of the oil pneumatic arrangement. There are so many different types of wheel landing gears used at the present day that it is possible here to only touch upon the most conventional types. With the wheel type landing gear a skid is used at the rear end of the fuselage to protect this part of the airplane in landing. It is made of wood or steel and mounted on a swivel near the center with rubber shock absorber cords attached at the upper end to take the shock in landing.

Float type landing gears consist of twin floats mounted side by side under the fuselage or one main float and wing tip floats to keep the wings out of the water. The most modern floats are constructed entirely of duralumin. In the main floats duralumin bulkheads are placed at intervals along the keel to shape the float. Sheeting is applied over the bulkheads and attached to them and to longitudinal

(Continued on page 233)

AIR-KING

To Fly is To Buy!

Men try the "Air-King" once—then their name goes on the dotted line. Why this enthusiastic, instantaneous approval for this better ship?

Not price alone!—but a combination of those features found only in high priced planes—plus—the $2100 price.

Where else, at this figure can you find: Adjustable stabilizer, Split type undercarriage, Inspection windows, Welded steel tube fuselage, Cowling over motor, Dash equipment, and many other "Air-King" features?

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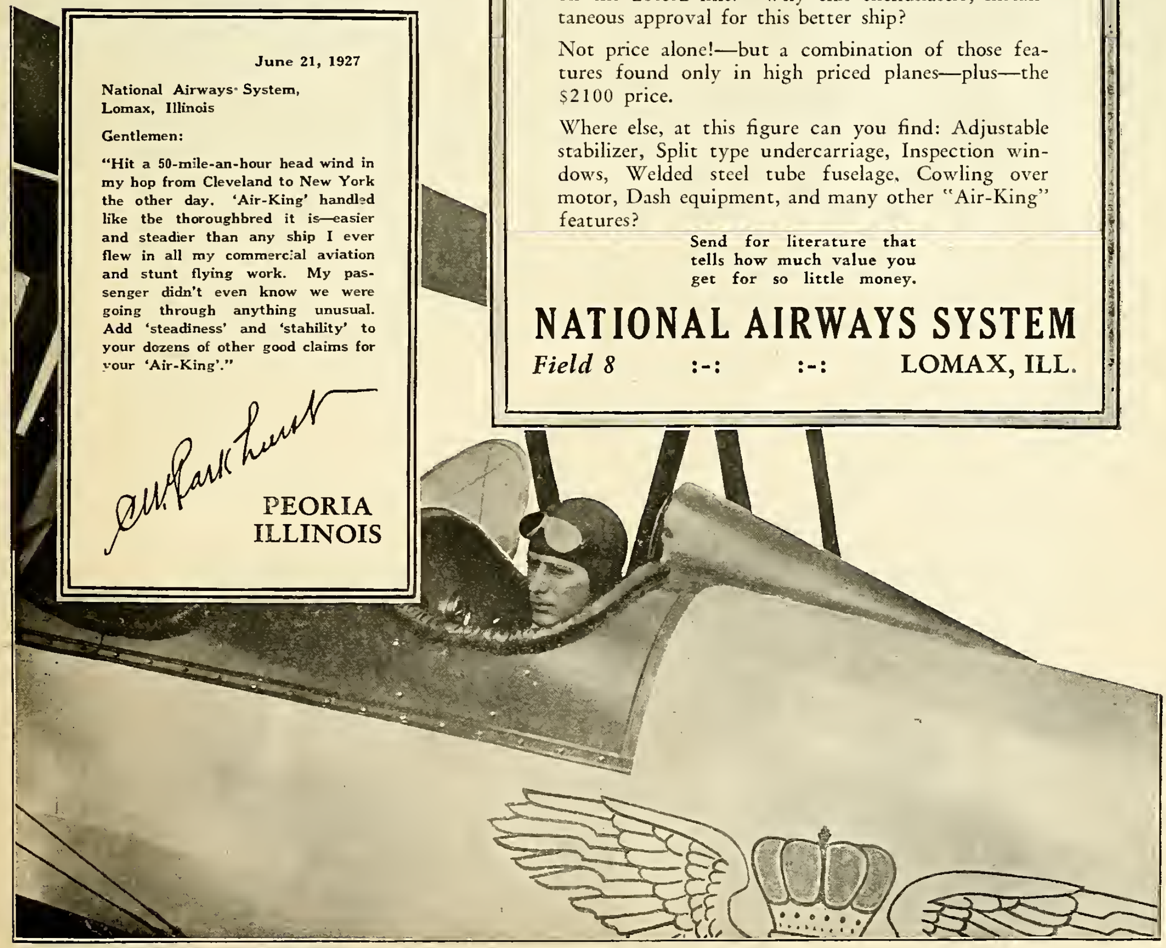

June 21, 1927

National Airways System,
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Gentlemen:

"Hit a 50-mile-an-hour head wind in my hop from Cleveland to New York the other day. 'Air-King' handled like the thoroughbred it is—easier and steadier than any ship I ever flew in all my commercial aviation and stunt flying work. My passenger didn't even know we were going through anything unusual. Add 'steadiness' and 'stability' to your dozens of other good claims for your 'Air-King'."

C.W. Parkhurst

PEORIA
ILLINOIS

TECHNICAL

THE STINSON CABIN MONOPLANE

By W. C. Naylor

Chief Engineer, Stinson Aircraft Corp.

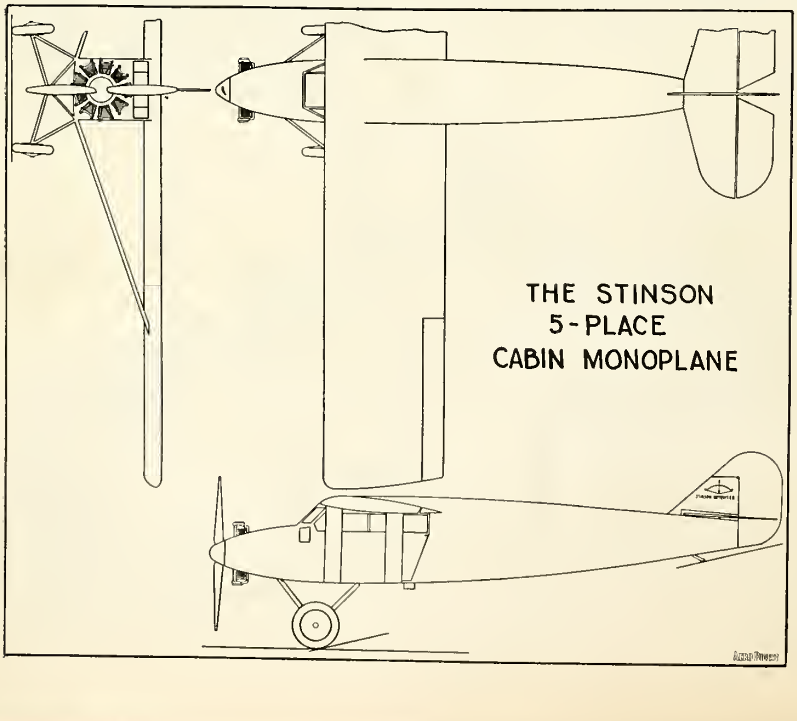
IN general the Stinson Monoplane is of conventional design. It is of the semi-cantilever type employing semi-lifting struts. The cabin is large and roomy, capable of carrying the pilot and five passengers in especially designed wicker chairs. Non-shatterable glass is used in the windows throughout and the blind spots where structural members occur are reduced to a minimum so the vision is practically unobstructed.

The ship is designed to give the pilot and passengers the same feeling of comfort and relaxation that the average person has learned to enjoy in the modern motor car. The Dep control appeals greatly, not only to the pilot but also to the business man. The sliding windows afford perfect ventilation on warm days while dual exhaust heaters so placed inside the exhaust ring, give unusual warmth on cold days. The stabilizer adjustment lever, located on the pilot's left, is operated and locked by a single motion thus taking care of any change of seating arrangement the passengers may care to make while in the air.

The wing structure itself is of usual design, double wired for drag and anti drag effects. Spars are of spruce, the front one routed out and the rear one solid. The reason for this is obvious when one examines the pressure movement of the airfoil used. This airfoil is of the constant pressure variety and is inherently stable. This feature allows the use of a neutral tail without sacrificing stability to any great extent. There is no down load to be carried on the horizontal tail surfaces. In the usual design this down load varies from 2 to 5 per cent. of the gross weight of the airplane, an important item where any degree of longitudinal stability is to be expected.

To those not familiar with the effect of pressure travel on longitudinal stability the following is given in explanation of the statements made in the paragraph above: In the airplane equipped with the ordinary airfoil the center of gravity must be located well in advance of the center of lift of the wing when in flying position. Since the center of pressure moves forward in a stall the C. G. must be located at its forward position in order that the ship will fall nose first out of a stall. In a dive the C. G. is of course well forward of the C. L. which tends toward a still deeper dive. It is here that the depressing tail comes into play for as the speed of flight increases the down load on the tail increases until such time as the moment of the tail is great enough to overcome the moment due to the C. G. and C. L. Thus the ship automatically comes out of the dive. This condition must be satisfied to insure stability.

In order to increase the efficiency of the aircraft it is desirable to do away with this down load on the tail which in a 3,000 pound plane amounts to over 100 pounds. In order to do so in the modern airplane it is necessary to provide other means for maintaining the stability, for stability is even more important than efficiency.



THE STINSON 5-PLACE CABIN MONOPLANE

An answer to this problem has presented itself in the form of the constant pressure inherently stable airfoil which is used on the Stinson monoplane. Fundamentally the pressure travel is exactly the opposite from that of the others. When the wing stalls the C. L. moves slowly back along the chord instead of forward as in the case of the other airfoils. The C. G. can be located near the aft position of this travel. Thus when the ship stalls a nose heaviness is felt exactly as in the former case, while in a dive the C. L. moves well forward, producing a corrective moment tending to bring the ship out of the dive.

In this way a neutral tail may be employed without sacrificing stability and it is believed that a slight lifting tail may be worked out to advantage, providing the wing is properly placed.

The lateral stability is of course unusually good due to the pronounced dihedral of the lift struts. The wing itself has no dihedral. Directional stability is taken care of in the usual way by off-setting the fin to correct for the twist in the slipstream.

All the gasoline is carried in the wings. This insures not only positive gravity feed but also puts down fire risk to a minimum. One tank in each wing panel thus supplies 35 gallons or a total of 70 gallons, sufficient for better than 5 hours' cruising at 100 miles per hour.

The ailerons are of welded steel tube construction fabric covered and actuated by steel push pull tubes working through Ahrens control tubes where a change in direction is desired. The steel tubes slide through special graphite bearings which insure lubrication for the life of the plane. This arrangement makes a neat and positive control requiring little or no attention.

The lift struts are steel tubes streamlined with balsawood. Screw adjustments are placed at the lower end to facilitate rigging of the wings.

The fuselage is of conventional welded steel tube construction. One piece tie straps take the tension loads from the lift struts at the bottom of the fuselage while heavy chrome-molybdenum tubes take the compression loads from the spars at the top of the fuselage. The elevator and stabilizer are controlled by push-pull tubes running in graphite bearings below the lower longerons but inside the fairing. The rudder is controlled by cables. The fuselage is tapered toward the stern on all four sides, the general lines being the result of considerable wind tunnel experiment.

The ship was designed using the conventional Army Air Service methods of stress analysis, giving factors of 5.8 in the

An Outstanding Record

This summary of the recent marvelous American exploits in the air is a summary also of the events in which Bohn Ring True Bearings have played a meritorious part:

COMMANDER BYRD'S epochal flight over the North Pole.
World's record sustained flight of 51 hours by Chamberlin and Acosta
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THE WRIGHT WHIRLWIND MOTORS IN ALL PLANES USED IN THESE FLIGHTS WERE EQUIPPED WITH BOHN RING TRUE CONNECTING ROD BEARINGS

We are proud indeed of the record of America in the progress of aviation and proud of the fact that Bohn has been able to contribute to the success of these heroic ventures

Bohn Aluminum & Brass Corporation

DETROIT, MICHIGAN

Makers of Bohn Ring True Bearings

BOHNALITE

wing structure at high incidence and 4.0 at low incidence. The landing gear and tail skid were designed with a factor of 6.

The ship is built for commercial service. Steel tubular construction in the fuselage insures strength and lightness with minimum maintenance costs. There are no brace wires to become slack and cause misalignment. The motor mount, tail skid and tail surfaces are of steel tubular construction —in fact the only wooden structural members in the ship are the spruce I beams and ribs.

The motor mount is constructed of chrome-molybdenum steel tubing with soft copper washers to absorb the engine vibration. The mount is secured to the fuselage by four bolts.

The entire tail unit of welded steel tube construction, fabric covered, is the same as used on the Stinson biplane.

The landing gear is also identical with that used on the biplane. Wheels are located well forward to prevent any tendency toward nosing over. The wheel brakes are standard internal mechanical brakes and are operated by a new heel operating device. The brake pedals are combined with the rudder control in such a way that when either right or left rudder is pressed the heel pedal operating that particular brake automatically comes up. Thus a considerable force may be applied to the brakes. When it is not desired to use the brakes the foot may be put on the rudder pedal alone.

General Specifications

Length over all	32 feet 0 inches
Wing span	45 feet 10 inches
Height overall	9 feet 0 inches
Wing chord	84 inches
Area of wings	292 square feet
Area of ailerons (two)	28.5 square feet
Area of rudder	12.8 square feet
Area of fin	6.0 square feet
Area of stabilizer	26.6 square feet
Area of elevators	19.6 square feet
Aerofoil	(N. A. C. A.) M-6
Incidence angle	3 degrees
Dihedral	Zero degrees
Weight of ship empty	1,970 pounds
Weight of gasoline (70 gallons)	420 pounds
Pilot and four passengers	875 pounds
Oil (six gallons)	45 pounds
Total weight	3,310 pounds
Engine	Wright Whirlwind Model J5
H.P.	200 h.p. at 1,800 r.p.m.
Wing loading	11.33 pounds per square foot
Power loading	16.55 pounds per B.H.P.

The high speed is 125 miles per hour plus depending on the pitch setting of the propeller. A standard steel adjustable pitch propeller is used. The cruising speed is 105 miles per hour while the landing speed with full load is 54 miles.

THE NEW DRIGGS DART NOW IN PRODUCTION

By Glenn W. Hawkins

THE first production job of the Driggs Aircraft Corporation was assembled and test flown on July 17th at the Capital City Airport by Lieut. "Eddie" Preston, chief test pilot for the corporation.

A stiff, rough wind prevailed and clouds threatened, but undaunted by either wind or storm, Lieut. Preston taxied out upon the field, gave the little ship a last once-over and was in the air after a run of not more than 20 feet. Climbing steadily, the ship reached an altitude of approximately 400 feet before being brought to an even keel and headed straight into the wind. In spite of the roughness which prevailed "upstairs" the Dart handled easily and after soaring about for a short time, during which Lieut. Preston put the ship through various maneuvers, he brought it down to a pretty landing. From the time the ship was within 200 feet of the ground until it had come to a complete stop, it did not cover a horizontal distance of more than 150 feet.

Many new and unusual features are embodied in the new ships, including the replacing of flying and landing wires by steel tubing, streamlined with Balsa. These four struts replace twelve wires. A sturdy "V" type landing gear, with the shock cord in the center made easily accessible, offers a new appeal.

One of the most notable advantages of the new construction is the interstrut feature which makes it possible for practically anyone to assemble it at the field without difficulty, doing away with the old complicated lining up work.

Other new features worthy of mention are:

Differential aileron control.

Tail surfaces and ailerons entirely of tubing, braced by means of tubing trusses.

Fuselage built up entirely of welded steel tubing over a jig which insures even work and balance.

"N" type center section struts of streamline steel tubing. End struts of streamline steel tubing, two each, reinforced with incidence wires.

Covers of Flightex fabric with five coats of nitrate dope and two coats of aluminum pigmented dope.

Upper wing built in three section, two lower panel. Beams of spruce, ribs of pressed dural and gussets and braces of dural tubing.

Dual ignition 35-40 h.p. Anzani motor, air-cooled. Dual ignition insures firing and more power. Positive mechanical valve action. Special oil pump insuring perfect lubrication. Special exhaust collector ring and semi-muffler.

Gas consumption 3¼ gallons per hour. Oil, one quart per hour.

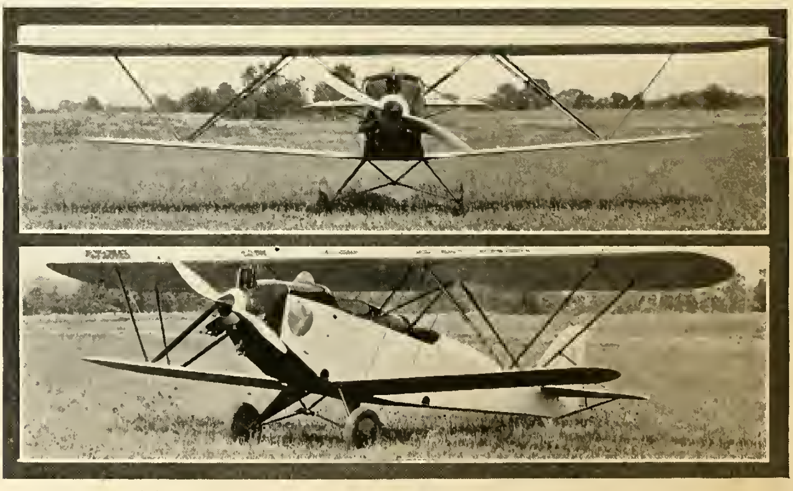
Members of the Dayton (Ohio) Junior Chamber of Commerce Lightplane Club are anxiously awaiting completion of the test flights of this first production job, at which time a member of their club will entrain for Lansing to fly the new Dart to Dayton.

Orders are coming in for the new Driggs Darts in a most satisfying manner, according to officials at the factory, and the office has been flooded with inquiries from all parts of the United States and many from Canada and Mexico, the majority of them brought about by the article published in the June issue of Aero Digest, this fact being mentioned in nearly all of the letters.

One of the new ships will be delivered in Lansing at an early date providing plans for the organization of a lightplane club are carried through in the near future. The organization of the club was first contemplated late in 1926, but definite action was not taken due to the fact that the prospective members desired to await the completion of the Driggs Dart II before picking a training plane.

Other flying clubs about the country have expressed their interest in the new Dart through inquiries to the Lansing office. Many auto dealers and other business men in various parts of the United States and Canada have conferred by letter with Mr. Driggs, vice-president and general manager of the corporation, and designer of the new ship, regarding the contract for the Driggs Dart agency in their vicinity.

Among the orders most recently received and the one most distant from Lansing thus far, was that from James P. Whitall, son of the well known rug manufacturer.



The newest type Driggs "Dart" with Warren truss struts.

AN APOLOGY

Office of
THE PRESIDENT

July 14, 1927.

My Airminded Friends:

We have an apology to offer for having to set back delivery dates for those who are in a hurry to take delivery on their Eaglerocks.

Last year at this time we were producing one ship per month. We have worked that up to better than one a day and still at this writing are 41 ships behind sales.

We had hoped that by building right thru the winter and having about 30 Eaglerocks on hand for spring delivery, we would be able to satisfy promptly all of those who honored us with their orders.

However, you have my promise that we will increase production capacity as fast as it is humanly possible without sacrificing quality.

With a smile,

J. DON ALEXANDER,
JDA/A President.

ALEXANDER EAGLEROCK

Price $2475 Denver

or a plan of
TIME PAYMENTS
may be arranged

Performance with Economy

ALEXANDER AIRCRAFT CO.
Room 403
DENVER COLORADO

another record broken

(Reprint Oklahoma News of July 9th, 1927.)

Bob Tarbutton broke the national endurance record for the OX-5 type of airplanes on July 8th, when he flew a stock model Eaglerock 9 hrs. and 17 minutes over Oklahoma City.

During the flight Tarbutton covered a distance of 850 miles, averaging 18 miles per gallon. He used three quarts of oil.

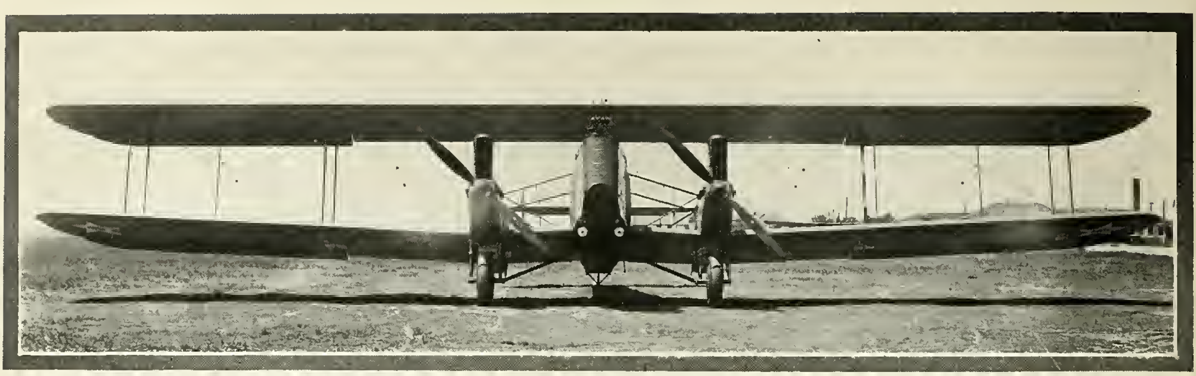
Just before the gas supply of his 46 gallon tank was exhausted, Tarbutton mounted to 4,000 feet over the heart of the city and when the engine finally died, volplaned 6 miles to his airport north of the capitol, where he made a perfect dead-stick landing.

Editorial Comment

The long endurance flight demonstrated two things: the economy of Eaglerock operation and the safety factor due to its floating characteristics should the motor die over a point of impossible landing.

DEALERS

Florida—Wesley N. Raymond, Puntagorda, Fla.
Georgia—Georgia Airways, Inc., Candler Field, Atlanta, Ga.
Ky. and Tenn.—Datin Eaglerock Sales Co., 2031 Central, Memphis.
N. C. and Va.—Charles Flying Service, 5100 Garland, Richmond, Va.
Northern Iowa—Pioneer Flyers, Inc., Mason City, Iowa.
Indiana—Captain J. A. Yonge, P. O. Box 1185, Indianapolis, Ind.
Michigan—Niles Airways, Niles, Michigan.
N. Y. and Conn.—Atlantic Airways, New Rochelle, N. Y.
Wisconsin—Hall Aircraft Co., 101 Scott St., Wausau, Wisconsin.
Ill. S. Wisc.—Sievert Aircraft Corp., 5934 So. Cicero, Chicago, Ill.
E. Mo., Ark. and S. Ill.—Bridgeton Aircraft Corp., 223 Pierce Bldg., St. Louis.
W. Mo. and E. Kan.—Bennett Eaglerock Sales Co., 223 W. 12th St., K. C., Mo.
Okla. and Tex. Pan.—Southwest Airplane Sales Corp., Britton, Okla.
N. M. and Cen. Texas—Browning Airplane Sales, Wichita Falls, Tex.
Southern Texas—Marion P. Hair, P. O. Box 420, San Antonio, Tex.
So. Cal. and Ariz.—Aero Corporation of California, Western Ave., at 99th St., Los Angeles.
Northern California—Jas. L. Mayberry, 1210 B'way, Fresno.
W. Washington and W. Oregon—Story Eaglerock Sales, Mueller-Harkins Airport, Tacoma, Wash.
Wyo., Mont. and W. Neb.—Wyoming Airways, Casper, Wyoming.
S. Dak. and N. Dak.—Rapid City Air Lines, Inc., Rapid City, S. D.
W. Kan. and E. Neb.—C. E. Steele, Dodge City, Kansas.
La.—Louisiana Airways, 1712 Pere Marquette Bldg., New Orleans.
W. Va. and E. Ohio—Lyle H. Scott, 328 2nd St., Marietta, Ohio.
Utah, Nevada, S. Idaho—Rocky Mountain Airways, Salt Lake City.
Mississippi—Tri-States Airways, Bry Block, Memphis, Tenn.
Maryland and E. Penn.—Hybla Valley Aviation Co., Alexandria, Pa.
So. Carolina—Erritt Williams, Greenwood, S. C.
Me., N. H., Vt., R. I. and Mass.—Massachusetts Airways Corp., 1597 Main St., Springfield, Mass.

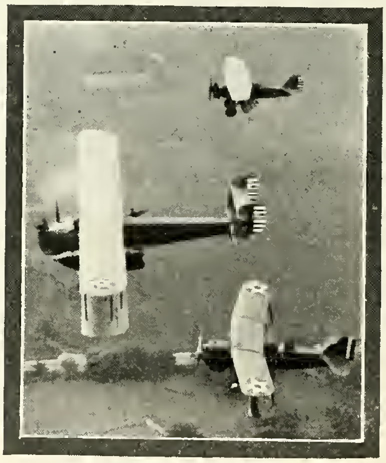


THE CURTISS "CONDOR" BOMBER

THE Curtiss Condor (XB-2), the latest word in night bombardment airplanes, built for the U. S. Army Corps by the Curtiss Aeroplane and Motor Company, of Garden City, N. Y., was completed early in July, and put through a series of preliminary flight tests at Mitchel Field by Lieut. Eugene C. Batten of Wright Field. The Condor is of all-metal construction, fabric-covered. It has a wing spread of 90 feet and weighs, fully loaded, approximately 16,300 pounds, more than eight tons. It is powered with two 600 h.p. Curtiss engines of the new geared V-1550 type and carries a useful load of over 7,300 pounds (45 per cent. of its gross weight) as compared to 4,800 pounds for the standard service bomber now in use by the Air Corps. Of the 7,300 pounds, approximately 2,500 is bomb load.

In spite of the great size and heavy load of the Condor, it has a performance exceeding that of any bomber in the United States. In its preliminary tests, it attained a speed of approximately 128 miles an hour as compared to 99 miles an hour for the standard service bomber, climbed more than twice as fast, and showed a service ceiling of more than 15,000 feet as compared to 8,500. Fully loaded, it took off in only 18 seconds, climbed rapidly and answered all controls perfectly in flight. During the tests, Lieut. Batten repeatedly demonstrated its ability to fly well on one motor with full load, an impossible feat with the present service bomber.

The Condor carries a crew of five—one pilot, one bomber, and three machine gunners to ward off attacks by hostile aircraft. The three gunners are so located as to ward off attack by hostile aircraft from any quarter. One is stationed at the bow of the ship, where his double Lewis guns command the entire area forward, above, or below the plane. The other gunners, instead of being carried in the conventional location in the fuselage, are stationed in the rear of the engine nacelles, where they have unrestricted range of fire to the rear. This novel arrangement makes possible the intersection of fire from at least two of the three gunners at any given point. The pilot is located in the conventional position in the forward part of the fuselage. Beside him is another pilot's seat, and in case of emergency the bomber, whose station is just forward and below the pilot, can slip into this seat and fly the plane. Likewise the forward gunner, if necessary, can occupy the bomber's position, and vice versa. One of the nacelles is equipped with radio apparatus, with the gunner serving as radio operator.



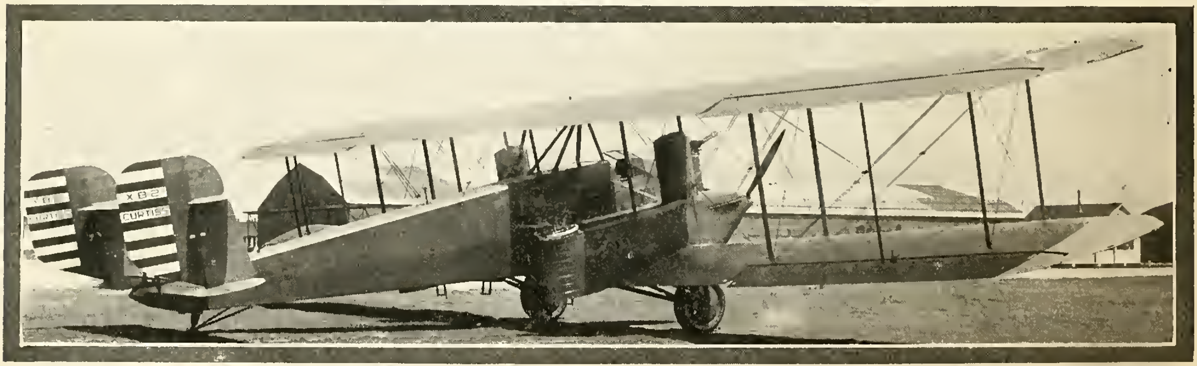
The Condor in test flight.

STRUCTURAL DETAILS

The wing cellule is a conventional equal-span biplane arrangement, characterized by an exceptionally high aspect ratio (10) and no stagger. The upper wing is composed of a center-section and two outer panels and the lower has two sidewalk panels, inboard of the engine nacelles, and two outer panels. The wing curve used is the Curtiss C-72, developed in the Curtiss aerodynamical laboratories. The chord is 108 inches and the gap at the nacelles 126 inches. The total wing area is 1,498 square feet, making the wing loading 10.9 pounds per square foot. Balanced ailerons, of the Frieze type, are used on both upper and lower wings, and provide exceptionally easy and effective lateral control.

The wing structure is of metal, fabric-covered. Spars and drag truss members are of welded, heat-treated steel tubing, and ribs are duralumin. Interplane bracing consists of the usual streamline steel tube struts and streamline wires, with all attaching fittings concealed within the wings.

Through careful engineering, the metal



View showing the right hand engine nacelle with gunner's compartment.

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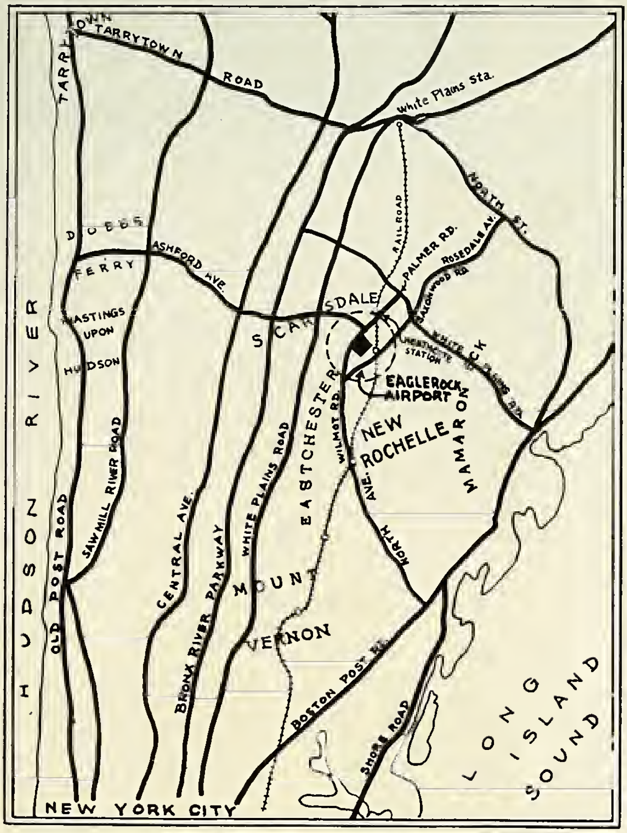
The nearest Flying School to New York



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Telephone Chelsea 3542

wing structure is lighter than wood. The average weight of the wing panels on the Condor is 1.30 pounds per square foot, as compared to 1.34 pounds per square foot for the wood-and-fabric wings of the NBS-4 bomber built by the Curtiss Company in 1924. This is in spite of the fact that the wing loading of the Condor is greater than that of the NBS-4.

The fuselage of the Condor is constructed of duralumin tubing (with the exception of the bomb bay, which is steel tubing), using a Warren truss with steel fittings. Riveted construction provides for easy repair in case of damage to any member.

Non-shatterable glass windows are provided in the nose and floor of the fuselage for bomb sighting.

Two side-by-side pilot's seats are provided in the fuselage, with an ingenious "single-dual" control column. This is a conventional wheel type of control, provided with a hinged column so that the wheel can be swung from side to side and operated from either seat. As in all current Curtiss types, the seats and rudder pedals are adjustable to suit the pilot. Auxiliary pedals are used for operating the hydraulic brakes. Sliding metal floors provide for easy access to the pilots' seats from the bomber's compartment, and vice versa.

The standard Army type G-5 bomb rack is carried in the fuselage, just aft of the pilots' seats. Rip panels in the fuselage covering, equipped with hookless fasteners, facilitate the loading of bombs or inspection of the bomb racks.

Landing Gear

The shock-absorbing unit of the landing gear is a combination of oleo with the compression-rubber disc unit which has been used so successfully on other Curtiss types. This arrangement provides for a maximum wheel movement of sixteen inches, insuring smooth landing and taxying qualities. The tailskid likewise is provided with oleo-rubber shock absorbers.

The huge 54 x 12 wheels are equipped with hydraulic wheel brakes of the external band type. They may be applied either in unison to cut down the roll after landing, or independently as an aid to ground maneuvering.

Engineers and pilot of the Curtiss Condor. Left to right—T. P. Wright, Chief Engineer; Lt. Eugene C. Batten, U. S. Air Corps test pilot; R. B. Beisel, Design Assistant; and George A. Page, Project Engineer.

The power plant consists of two Curtiss engines, of the new geared V-1550 model. This engine is a 12-cylinder water-cooled Vee type, developing 600 horsepower at 2,400 r.p.m. It weighs but 830 pounds, and in spite of its increased power, has practically the same overall dimensions as the famous Curtiss D-12 engine of 440 h.p.

The engines are carried in outboard nacelles between the wings. The nacelle structure is of steel tubing and the motor mounts are detachable. One 192-gallon fuel tank is carried in each nacelle, just aft of the motor, and in addition one 60-gallon gravity tank is carried in the upper wing. Either engine can take fuel from any one of the three tanks. Further, in case of failure of the fuel pump on either engine, the other will supply fuel to both engines. The nacelle fuel tanks are provided with large dump valves, permitting 2,300 pounds of fuel to be jettisoned in 40 seconds.

Radiators of the cartridge core type are carried directly above the engine nacelles. They are provided with vertical-vane shutters, and carefully faired to present a minimum of resistance.

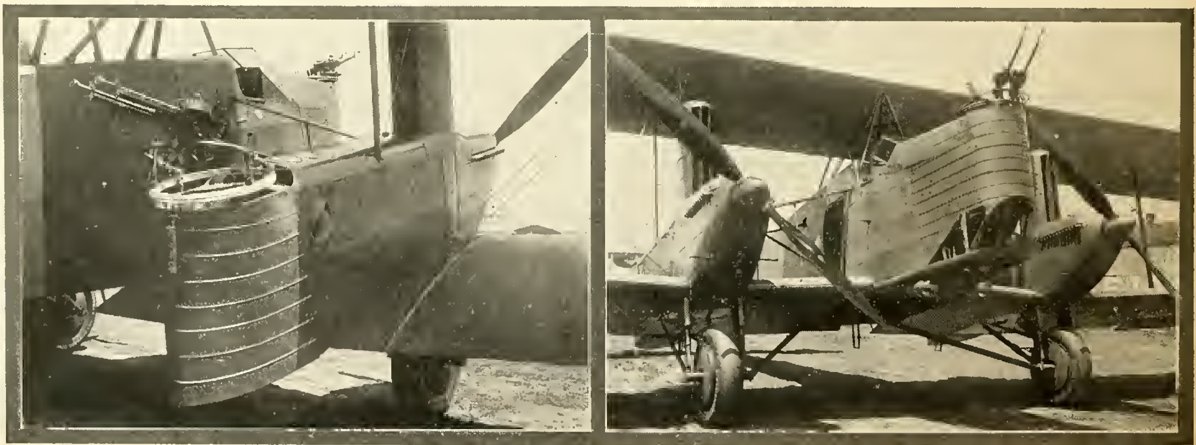
The cowling of the engines is exceptionally clean, and is provided with the new flush-type fasteners, facilitating quick removal and replacement.

The 14-foot Curtiss-built propellers are of the adjustable pitch type, with duralumin blades. They turn at half crankshaft speed.

The Condor is provided with a biplane tail, similar in design to that used on the NBS-4 bomber. The structure is of duralumin, fabric-covered. The stabilizers are adjustable in flight, and the double rudders are provided with an automatic compensating device, which can be set by the pilot to hold the rudders in an offset position when flying on one motor, thus relieving the pilot of the physical strain of steering against one motor.

The general design of the Condor was worked out under the guidance and with the close coöperation of Air Corps bombing experts and engineers.

The entire structure of the Condor is metal, fabric covered. A large percentage of the metal used in duralumin, though alloy steel is used in the more highly stressed members. It is interesting to note that the metal structure, with its longer life and easier maintenance, has been produced as light as an equivalent wooden structure. As an example of the careful engineering control exercised to bring about this low weight, the Condor when finally completed and placed on the scales, weighed within ten pounds of the original weight calculated by Curtiss engineers—a weight error of less than one-tenth of one per cent.



Details of the new Curtiss Condor bomber showing the arrangement of armament.

GIBBONS COMPANY

Airport and Field Equipment Engineers and Builders

BROOKLYN AIRPORT AND FIELD

A. Revised B map, July 2, 1927. Under this plan this would make the most convenient, practical and fully equipped airport in the United States, if not in the world.

B. Situated right on New York Bay.

C. One mile from General Post Office of Brooklyn, and within easy distance of the General Post Office of New York and the financial district.

SPECIFICATIONS AND PLANS FOR LAY OUT OF FIELD

Copyrighted 1927 by Gibbons Co.

1. Service hangars for one hundred and fifty planes, aside from air mail planes.
2. Dirigible hangar and mooring mast for large dirigibles.
3. Balloon hangar for smaller dirigibles and observation balloons.
4. Service on site to accommodate in open space two hundred planes; this will not affect landing and launching facilities on the field operations.
5. Passenger and freight depot.
6. Subway connecting with present Borough Hall system, running down through Court or Clinton Street, terminating at Airport, one mile from Borough Hall.
7. Telegraph and telephone service in rest room.
8. Property not owned by the City or State could either be acquired or leased.
9. Eighty percent of this site is graded and the balance can be graded and ready for landing of planes pending the construction of hangars, inside of six weeks.
10. On this site a central heating and generating plant could be erected.
11. On this site a helium purification plant and storage tanks could be erected.
12. Airplane factory, mill, iron and machine shops could be erected.
13. School to train pilots, mechanics, Fire and Police Departments, National Guard, Naval Reserve and the Post Office Department.
14. The State could have a small airplane carrier to be used in the State waterways and New York Harbor. The crew for this carrier can be composed of members of the State Police. At the New York end this carrier can be docked in the waters of the Barge Canal property adjoining this field.
15. New York City Fire Department station is now located at the corner of Smith and Lorraine Streets, two blocks from field.
16. Large oil company's plant adjoining the field on the south. This plant has a capacity sufficient to supply all of Brooklyn, including this field.
17. Administration offices and quarters for personnel, etc., could be provided in the wings of the hangar similar to the Lakehurst hangar.
18. On the present tower of the Barge Canal building, overlooking the field, New York Bay and the Narrows, a weather observatory, field light, signal system and wireless station can be installed.
19. Trolley, bus, and ferry systems can be installed to meet the public demand later on.
20. U. S. Naval supply base is directly across the Gowanus Canal, less than three-quarters of a mile from field.
21. U. S. Naval Reserve Armory and training ship within one mile of field facing on New York Bay.
22. U. S. Army supply base within three-quarters of a mile from the field, facing on New York Bay.
23. New York City fire boat station within one quarter of a mile of field on the Gowanus Bay at the foot of 39th Street.
24. Housing facilities to accommodate United States Custom House Officers.
25. Wireless power station, fog horns, etc., radio path finders.
26. Fort Hamilton, Fort Wadsworth and Governors Island, N. Y. Bay fortifications are located a short distance from field.
27. Rainbow beacon lights to penetrate fogs. These lights were recently invented.
28. Each of the five boroughs should have an airport.
29. The income from an airport like the above, owned either by the State, Municipality or private enterprises, would be sufficient to place it on a paying basis in one year's time.

A. What Rear Admiral Bradley Fiske, U. S. N. retired, stated in 1924. "In answer to air attacks, we have no housing, landing or launching facilities in Greater New York neither for commercial, Navy nor Army service.

Are the New York interests asleep to the fact that it is more important to have air protection than it is to have the Navy Yard, Police or Fire Department protection? They can have the Air Service protection to respond when housed on the shores and in the heart of the Municipality in an instant.

Look for instance the risk the poor man is running who owns his home; one hour aerial attack would impoverish both the rich and poor. If our Government does not take heed then our municipality or the private interests should.

To take adequate precautions would not be difficult, provided only the people were inspired with a reasonable understanding of what this wicked world actually is, combined with a reasonable amount of patriotism."

B. Airports to link English cities with Croydon hangars.
(*From the Herald Tribune Bureau in London.*)

The establishment of airports at large cities in the midlands and northern England is now being proposed. It is intended to link up Croydon, the chief English terminus of the continental airlines with these cities through routes operated by fast taxiplanes timed to connect with the continental air expresses.

The first cities to have airports will be Leeds, Liverpool, Newcastle, Norwich, Glasgow and Birmingham.

Croydon, London's airport, reports the departure or arrival of 26,500 passengers by airplane in 1926. *Considering that America produced the Wright Brothers, U. S. A., their backwardness in this air field is notable, and wholly unexplained by conditions.*

Only responsible authority on local airports will be considered by us.

THE GIBBONS COMPANY

Office, 343 Columbia Street, Brooklyn, N. Y.
Established 1869

We are a sustaining Member of the National Aeronautic Association of U. S. A. for the purpose of promoting aviation.

THE LOCKHEED CABIN MONOPLANE

"A COMMERCIAL airplane with a fighting performance" is the claim made by the manufacturers of the new Lockheed cabin monoplane, "The Vega." The general arrangement of the plane shows a cleanliness of line and lack of parasite resistance heretofore seen only in costly racing type planes. Monocoque plywood is used for the fuselage. This type of fuselage construction has been used for all successful modern racing airplanes (including Italy's successful contender in the 1926 Schneider Cup Race, and the famous Curtiss racers) as well as some of the most recent and successful military planes of Great Britain and France.

By a patented process developed by Malcolm Loughead (inventor of the Lockheed Hydraulic Brake), Allan Loughead, John K. Northrop, Anthony Stadlman and exclusively controlled by the Lockheed Aircraft Company, each half of the complete fuselage shell is assembled and glued as a unit under a pressure of 150 tons so that a perfectly uniform and homogeneous shell of plywood results. The materials used are vertical grain spruce and casein glue.

The completed fuselage shells are assembled to laminated spruce diaphragms, or rings which hold the shells rigidly in place, and make of the fuselage in effect a giant tube, tapered at both ends.

At points of concentrated loading such as engine mount, wing and tail surface attachment, and landing gear attachment, heavier stiffening diaphragms are used, so that the bending and torsional loads are uniformly distributed throughout the shell. A short section of aluminum cowling around the engine in front and a small aluminum fairing in the rear complete the streamlined fuselage structure. This fuselage, when completed, requires no alignment, recovering or further attention except for an occasional coat of varnish or lacquer.

The wing is of the full cantilever type. This wing has been built to compare favorably in weight with the conventional wood and fabric type, thus eliminating the one objection, excessive weight, that has heretofore been raised. The spars are of spruce box type, with spruce caps and spruce plywood webs. The spars taper in depth and size in proportion to the weight imposed throughout the wing, being about 18 inches deep in the center and 5 inches deep at the tips. The ribs are of the latest type of girder construction. The whole wing is covered with $\frac{3}{32}$" spruce plywood. As is the case with the monocoque fuselage, the "Vega" monoplane wings requires no structural alignment or care with the exception of an occasional coat of varnish during the life of the plane. The wing is attached to the fuselage at four points by sixteen $\frac{5}{16}$" diameter tie rods, giving a factor of safety of over 30 at this point. The main wing fittings are provided with eyes for hoisting the wing or plane when desired.

Control surfaces carry out the same type of construction as above outlined, being covered with plywood and reinforced where necessary. The ailerons are attached to the wing throughout their entire length by means of a continuous dural hinge, thereby distributing the aileron loads. The gap between the aileron and the wing is completely closed obviating the danger from jambing. The movable tail surfaces are also fitted to reduce the gap to a minimum. The stabilizer is adjustable while in flight, being actuated by two small diameter screws operating in trunnions at its leading edge. The stabilizer is a cantilever structure and is carried through the fuselage without a break in order to obtain all possible strength and stiffness. All control surfaces are operated by positive internal control mechanism. Transparent Pyrolin windows at inspection points give quick access to working parts of controls.

Standard 30 x 5 airplane wheels are provided as regular equipment. Larger wheels may be substituted for use in soft fields. The wheels are mounted on an axle of chrome-molybdenum steel of the divided type which is braced with two struts, one extending to the rear and one upward into the fuselage. The tail skid of heat treated alloy steel tubing is exceptionally well braced. A hardened manganese steel shoe is fitted, the same being reversible to provide for further use after one end becomes worn.

Lockheed hydraulic wheel brakes are built into the fairing of the wheels in such a manner that no additional head resistance results from their use. Steering action when taxying is provided by means of the rudder pedals which increase the braking action on one side and proportionally decrease it on the other when operated when the brakes are engaged. The brakes may be locked when warming up the motor.

The engine provided for standard installation is the 200 h.p. "Whirlwind" J-5. Due to the comparatively light weight and lack of parasite resistance of the Lockheed "Vega" monoplane, it is possible to operate the engine at little over half of its rated power output, and still maintain a cruising speed close to the maximum speed of most competing types. This advantage lengthens the serviceable life of the engine and decreases the already remote chance of breakage.

The nose of the ship is completed with a section of aluminum cowling. The engine is partially housed within this cowling, being mounted on a steel framework, ahead of a fitted fire shield. Carburetor drains, air intake and exhaust collector ring are carried outside the cowling which is readily removable for inspection or repair to the engine. No wooden members are used within the engine section. (*Continued on page* 190)

The fine streamlines of the Lockheed monoplane are shown in this view.

Waco Ten
"Whirlwind" Planes

—finish National Air Tour with highest percentage of possible points, 99 and 98 percent out of a possible 100 percent obtainable.

Waco Ten "Whirlwind" wins highest average speed for entire 4166 miles of tour, averaging 118.23 M.P.H.

Waco entered four ships and four ships finished.

All planes were standard Model Tens.

A letter today will bring complete details of the Waco "Whirlwind" and Waco OX5

WACO
AIRPLANES
MANUFACTURED BY ADVANCE AIRCRAFT CO., TROY, OHIO

Gasoline is carried in two 50-gallon tanks cradled between the wing spars just outside of the fuselage. This excess built-in tankage provides a cruising radius of over 1,000 miles when occasion demands, and is ready for use at any time. Normal gasoline capacity is 55 gallons, or fuel for more than 550 miles. The fuel tanks are provided with a simple dump valve for emergency use. The fuel feed is by gravity, without pumps or pressure system. It consists of a fuel line from each tank with a shut-off convenient to the pilot, connecting to a strainer so located that it may be drained while in flight, and a single line to the carburetor.

The pilot's cockpit is well shielded and comfortable, having a transparent cover which may be slid into place when desired, enclosing the pilot. This cockpit connects with the passenger cabin making it possible for the pilot to communicate with the passengers at all times. The large unobstructed cabin provided ample space for four passengers and baggage, or six passengers, if desired. The upholstered wicker seats may be quickly removed to provide cargo space, of which 100 cubic feet is available.

The personnel of the Lockheed Aircraft Company is as follows: Fred E. Keeler, president; Allan H. Loughead, vice-president; Ben S. Hunter, secretary; W. K. Jay, treasurer; John K. Northrop, chief engineer, and Anthony Stadlman, factory superintendent.

International.

George Hearst (left) and J. H. Frost who will pilot Hearst's new Lockheed plane in the Trans-Pacific flight to Honolulu.

Specifications and Performance

With 1000 *pounds pay load*

High speed	135 miles per hour
Cruising speed	115 miles per hour
Landing speed	50 miles per hour
Climb at sea level	1000 feet per min.
Service ceiling	15,000 feet
Gasoline consumption at cruising speed averages	12 miles per gallon
Cruising range	over 1000 miles
Total wing area	275 square feet
Wing span	41 feet
Length	27.5 feet
Weight, empty	1650 pounds
Normal pay load	1000 pounds
Gross weight	3190 pounds
Gasoline capacity, normal	55 gallons
Built-in tankage for 100 gallons	
Oil capacity, normal	5 gallons
Built-in tankage for 7½ gallons	
Seats four passengers and pilot, with baggage	
Cabin space	100 cubic feet
Pounds per sq. ft.	11.6
Pounds per h. p.	14.5

PERFORMANCE TESTS OF THE HAMILTON "METALPLANE"

THE Hamilton "Metalplane", produced by the Hamilton Metalplane Company of Milwaukee, Wisconsin, is a combination passenger, mail and taxi plane, with seating arrangements for pilot and five passengers, and can be supplied both as a land-plane and a twin-float seaplane. A general description and illustration of this plane was published in the April issue AERO DIGEST.

It is a full cantilever monoplane of metal construction throughout, the wings and fuselage being constructed of duralumin with the exception of the nickel steel fittings, and the landing gear of steel. The wings are attached to the wing stubs projecting from either side of the cabin by means of six bolts, thus facilitating the attachment of larger or smaller wings for different conditions of service. The cabin windows of "Triplex" safety glass and "Cellon" are located on the inclined lower surface of the wing stubs, and afford unusual visibility, extending as they do from close to the T.E. completely around the L.E. This arrangement also makes a very commodious cabin of 79 cu. ft. Behind the cabin is a large baggage compartment of 27 cu. ft. Access can be had through this compartment to the inside of the fuselage clear back to the tail-skid, thus facilitating inspection and repairs.

The pilot's cockpit seats two side by side, and can be furnished either with dual or single control. The controls operate at present by means of cables, but they are to be replaced by push and pull rods. The stabilizer is of course adjustable in flight. The pilot has excellent visibility to both front and rear, the level of his eye being about 4 inches above the top of the wing, and since the L.E. of the wing stub is transparent "Cellon" the landing gear wheels can also be seen. The landing gear is of the split axle type with oleo shock absorber, and 9 ft. tread. The 32 x 6 wheels are equipped with Sauzedde brakes.

The Wright Whirlwind J-5 motor is supported by a built-up duralumin mount which not only allows maximum accessibility but is unusually rigid. Two 40-gallon gas tanks, located in the wings, and a 4½ gallon oil tank, carry enough fuel for six hours cruising. An Eclipse Inertia Starter and Hamilton Metal Propeller complete the power plant equipment.

The ship has been successfully tested with a useful load of 2000 pounds or 9.1 pounds per horsepower, with which the take-off time was 16 seconds, and the distance 800 feet. This load is equal to 107 per cent of the weight of the airplane empty. For regular airline operation, however, the slightly less load of 1600 pounds is recommended. The performance with this load is as follows:

Take off	9 seconds
Top speed	120 m.p.h.
Landing speed	45 m.p.h.
Cruising speed	100 m.p.h.
Climb first minute	750 feet

SPECIFICATIONS

General

Type	cabin monoplane, commercial transport
Length overall	31 feet 5 inches
Height overall	8 feet 0 inches
Span overall	48 feet 5 inches
Crew and passengers, number	6

Power

Type	Wright Whirlwind J-5
Rated horsepower	220
Rated revolutions per minute	2000

Wing Data

Curve	N.A.C.A. 81J Modified
Dihedral	0
Span	48 feet 5 inches
Area	300 square feet
Aspect ratio	7.3

Weights

Wings, exclusive of stubs, 282 sq. ft. at 1.57 lbs per sq. ft.	444 pounds
Empennage	79 pounds
Fuselage	365 pounds
Landing gear	215 pounds
Control mechanism	43 pounds
Power plant complete	665 pounds
Furnishings and assembly items	49 pounds
Weight empty	1860 pounds
Useful weight	2000 pounds
Gross weight	3860 pounds

Safety Factors

The following safety factors are all higher than required by the Department of Commerce:

Wing structure, high incidence	8¼
Wing structure, low incidence	5¼
Wing fittings	15
Wing bolts	20
Landing gear fittings	15
Landing gear bolts	20

All other factors conform to those specified by the Department of Commerce for class 2 airplane.

NEW SPLITDORF MODEL B MAGNETO

INTRODUCING the company's newest type magneto, Al Chmela, special magneto sales representative of the Splitdorf Electrical Co., of Newark, N. J., has just completed a month's trip throughout the eastern States. Mr. Chmela is leaving again to continue his work in other sections. The new type magneto being featured by Splitdorf is known as Model B.

NEW YORK

National Airplane Show
and
MONSTER AIR CIRCUS

TETERBORO AIRPORT
HASBROUCK HEIGHTS, N. J.

New York's Nearest Airport *6 Miles Airline*

AUGUST Fri. 26 — Sat. 27 — Sun. 28

BENEFIT BENEVOLENT PROTECTIVE ORDER OF ELKS
CRIPPLED KIDDIES FUND

General Direction and Management
IVAN R. GATES

Notice to Exhibitors

Free show space will be tendered to all airplane manufacturers. Two show spaces for airplanes will be allotted to each exhibitor. Wire show manager, 140 Main Street, Lodi, N. J., for space reservations.

All commercial and military aviators invited to attend as guests of show committee. Wire for reservations for free parking space.

Free Texaco Gasoline and Oil to All Visiting Planes

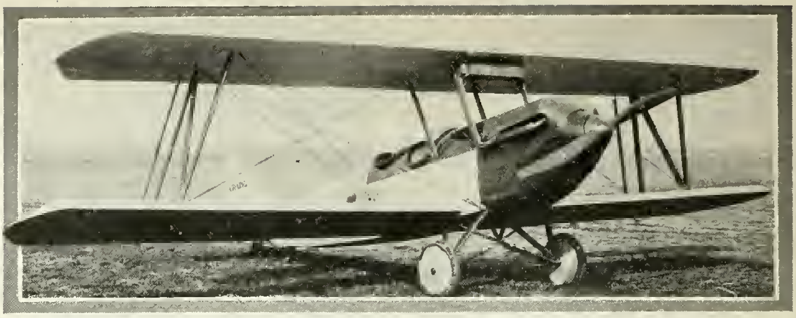
Field Manager and Director of Flying
Clyde E. Pangborn

Entire Exhibition Program
Staged by

GATES FLYING CIRCUS

Address all communications to show manager
140 Main Street, Lodi, New Jersey

THE LATEST AIR-KING


The OX-5 engined Air-King, produced by the National Airways System.

THE National Airways System's new light biplane was first shown to the public on May 1st this year at the biannual meeting of the Board of Directors. Later it was taken on tour throughout the mid-western flying fields and exhibited to the public. Much interest was shown in it by thousands who visited the fields.

The present plane is similar in general appearance to the former models except that it incorporates many advanced principles and improvements found practical and advantageous through a long series of field and machinery tests. It is provided with the light-weight, welded steel seamless tubing fuselage which resists flying and landing strain. Absence of wood and wire in the fuselage eliminates the liability of stretching, warping and twisting. Extreme care is given to the welding of each joint and brace. The engine mount is all steel, as is the fire wall.

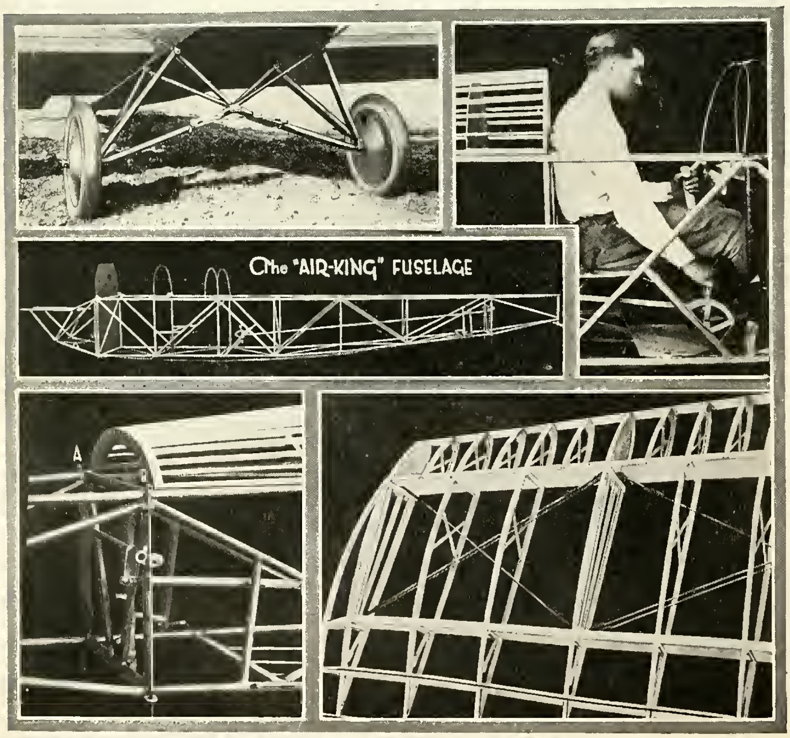
An interesting feature of the model 27 Air-King is the adjustable horizontal stabilizer. The pilot merely moves the control lever forward or backward to make adjustments which compensate for varying weight or loads. No effort is required to operate it, and adjustments can be made during flight. The lever is placed out of the way, thus avoiding possibility of fouling on parachute harness or safety belt.

The special Air-King 27 split axle type undercarriage is shock absorbing and checks rebound which in turn eliminates the possibility of "nosing-over" on rutty ground and making landing in heavy grass growth or uneven ground easy. The streamlined steel frame of the undercarriage cuts down drag to the minimum while flying. Shock absorber cord is easily removed or replaced and no complicated winding is necessary.

Wheels are streamlined with aluminum discs. Wide tread cuts down side sway while taxiing, aiding in wing tip protection.

The flying wires have welded-in fittings which makes it impossible for any flying or landing strain or stress to tear these fittings loose.

The cockpit is equipped with roomy, leather cushion seats. No cramping of arms or legs. Visibility is exceptionally good. No cabane struts interfere with forward vision. Full width windshields entirely block the rush of the slipstream. Controls are conveniently placed, giving confidence and worry-free flying. The rudder bar is well balanced and placed to give ease of operation. Stabilizer and throttle controls are within easy reach. The instrument equipped dash carries the tachometer, altimeter, oil pressure gauge, contact switch, and water temperature gauge.

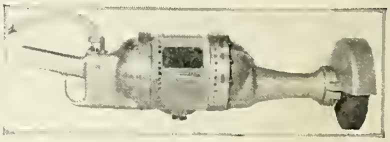


Some construction details of the new Air-King Model 27 commercial plane.

ELECTRIC GRINDER

OUTSTANDING progress in the development of universal-motored portable electric grinders has been made by Black & Decker during the past few years. One of the newest features to be embodied in the 5" and 6" machines is an internal gear drive which reduces the distance of gear centers and, consequently, reduces the diameter of the gear housing.

This internal gear, together with wheel spindle assembly, is shown in the accompanying photograph. This internal gear is of sturdy construction which makes for strength and long wear and also insures against distortion from heat-treating. Longer life and smoother operation have resulted from this gear design. The wheel spindle is supported at each end by tapered roller bearings which withstand the constant side thrust to which a grinder spindle is subjected. Another feature of this grinder is the location of the air intake holes, which method has been adopted to protect the motor windings from sharp particles of grit which may be pulled through the motor at a great velocity with the ventilating air. These machines find ready application in the aeronautical industry where there is considerable grinding and buffing required.


The Black & Decker electric grinder.

CONVENIENT TOOL SET

TWELVE vari-sized sockets, half and three-quarter inch male plugs, ten-inch "T" handle and seven-inch extension bar, comprise the new super socket set just announced by Splitdorf Electrical Company for service station service.

This new Bethlehem Socket Wrench set was especially designed for service stations and repair shops. The sockets are manufactured from the best grade solid bar steel carefully broached to size, chamfered, knurled and tapered to fit over nuts and bolts in tight places. The surface is copper-plated to prevent rust. The sockets are hexagonal and square. The "T" handle is with square adapter and the extension bar with half inch square socket.

OFFERINGS
of NICHOLAS-BEAZLEY AIRPLANE CO., Inc.

Adapters JM (2 to 1 reduction)	$5.00
Oil gauges, indicating to 50, 60 and 120 pounds	1.50
Tachometers JM, new production type A	12.00
Tachometers, Jones, new production	22.50
Fahrenheits	6.00
Ignition switches	1.25
Clocks—Waltham—8-day	18.00
Compass—Sperry, Navy Type	12.00
JM tachometer shafts and housing—all lengths from 3 to 16 feet priced very low.	
Non-Shatterable goggles	2.00
Helmets—all makes, patterns and materials.	
The famous NB2 suede	4.00
White heavy cloth	2.00
White flying suits, with aviation insignia	5.00
New DH tires	10.00
New 26 x 4 tires	8.00
New 26 x 4 tubes	2.25
New DH wheels	8.00
Flightex Fabric AN Specification...per yard	.50
2¼ in. plain tape ...per yard	.02
2¼ in. scalloped tape...per yard	.03
New ½ in. shock cord—50 feet or more per foot	.16
Air Service gas hose ⅜ in....per foot	.25
½ in. Service gas hose ...per foot	.30
Ignition cable, high tension, fabric covered	.03
Spark plugs BG, Mosler, Champion, A.C., Bethlehem at low prices.	
New production nitrate dope—barrel lots	$1.09
Aluminum powder, $1.00 per lb. 5 lbs. at 90c per lb.	
Complete stock of Haskelite Plywood at low prices.	
Complete stock, Government inspected Aircraft Specifications, spruce, all dimensions at low prices.	
AN Specification bolts, nuts and clevis pins, all new production, all sizes at low prices.	
Complete stock AN Specification turnbuckles, all sizes at low prices.	
Complete stock of round and streamlined steel tubing at low prices.	
First aid kits	1.00
New Pyrene fire extinguisher	9.00
New flash fire extinguisher	6.00
26 x 4 wheel bushings ...each	.50
Bosch booster magnetos	25.00
Newly manufactured safety belts	6.00
OX 5 engine manuals	.25
New production exhibition parachutes	100.00

Complete stock of sheet and round tube, aluminum and dural, low prices.

ENGINES

OX 5 New, original crate	$350
OX 5 Government—overhauled	225
OX 5 Good used	150
OXX 6 new	650
OXX 6 overhauled	400
OXX 6 good used	300
Hispano Suiza, Model A, overhauled	500
Hispano Suiza, Model I, overhauled	750
Hispano Suiza, Model E, 180 horse power, overhauled	750
Liberty Six, new	500
Anzani, 35 horse power	350
Anzani, 45 horse power	375
Anzani, 90 horse power	450
Anzani, 110 horse power	475

All orders received are shipped on the next train. We have nine warehouses full of parts, supplies, motors, etc. Send us a trial order. Complete satisfaction guaranteed.

"We ship the same day and will be here tomorrow"

NICHOLAS-BEAZLEY AIRPLANE CO., Inc.
MARSHALL, MISSOURI

PROTECT
your plane by using the best covering available—

BE sure that the covering you choose for your plane possesses the best raw materials obtainable and the highest degree of workmanship. Dartmouth-Tex Aero Cloth has both of these qualities. Compare a sample of Dartmouth-Tex with any other covering and you cannot help but be convinced of its certain superiority.

Dartmouth-Tex is a grade A, mercerized cotton, full count fabric, 36 inches wide, for

WINGS
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WESTERN NEWS

PEACE JUBILEE MEET

THE International Aviation Peace Jubilee was held at Santa Ana, California, July 2nd, 3rd, and 4th under the joint auspices of the Hollywood Aero Club and the Santa Ana Air Club.

As a contribution to the development of aviation, this meet was one of the most educational, scientific, interesting, and enthusiastic one ever held. Credit for the success of the meet was due to the efforts of the members of the two aero clubs acting under the directions of Roger J. Adams president, J. Harry Fieldhouse, secretary of the Hollywood Aero Club, B. E. Morthland, president and J. O. York, secretary of the Santa Ana Air Club. Burr McIntosh was in charge of radio publicity and George Raymer of Santa Ana Chamber of Commerce, committee on arrangements.

A squadron of planes from the Naval Air Station at San Diego were piloted by a number of the crack pilots of the Navy and their exhibitions of skill and courage during the meet was a revelation to their audiences.

Colonel Graham, Commander of Rockwell Field, San Diego, flew to the meet with a squadron of the latest type army planes.

From Cleveland, Ohio a plane named "The City of Cleveland" made a flight to the meet for the purpose of honoring the Peace Jubilee.

Spokane, Washington sent a plane piloted by Nick Mamer who flew to the meet in record time.

From Hollywood, an Eaglerock — the "Chinese Dragon"—owned by Sid Grauman, made its first flight to the Jubilee after being christened by Miss Mary Pickford, at Grauman's Chinese Theatre.

"Miss Visalia", an Eaglerock, flew to the meet from Visalia, California. Planes from many important airports in Southern California attended the Jubilee. During the three days nearly a hundred pilots registered at the headquarters on the field.

A lesson in the handling of air mail was given on the Fourth of July when a Pacific Air Transport mail plane, a Ryan monoplane, preliminary to its scheduled trip from Los Angeles to Seattle, made an official call at the airport for a bag of mail containing hundreds of postal cards from the spectators to the Mayor of Seattle. These cards carried the first Lindbergh air mail stamps of the Santa Ana Post Office.

Twice a winner in speed contests.

Lt. Burroughs, holding Newport Beach Legion of Honor trophy won July 4th at Santa Ana, and Theo. A. Woolsey, chief engineer of the Thunderbird Aircraft Co. and designer of the Thunderbird, with AERO DIGEST *trophy won by Lt. Jack Frye last September in high speed race at Clover Field.*

Following is a list of the contests and winners:

"On to Santa Ana"—Won by Kenneth Cole in "City of Cleveland" entry; carrying one passenger, Clifford Gildersleeve, chairman Aviation Committee Cleveland Chamber of Commerce.

July 2nd, Parachute Jump—Lt. W. T. Dodson, USN., 1st place; Stanley Fulmer, 2nd place.

Bomb dropping contest—Lt. K. C. Hawkins, USN., 1st place, UO-1; Lt. Seiler, USN., 2nd place, NB-1 (Boeing); Jack Frye, 3rd place, Eaglerock.

Balloon Straffing—Lt. Tomlinson, USN., 1st place, Travel Air; Ens. Williams, USN., 2nd place, NB-1 (Boeing); Ray Crawford, 3rd place, JN-4.

30-Mile Race (for 100 h.p. planes)—Jack Frye, 1st place, Eaglerock; Paul Richter, 2nd place, Eaglerock; Nick Mamer, 3rd place, Laird Swallow; Eddie Martin, 4th place, Martin Monoplane.

Dead Stick Landing Contest—Jack Frye, 1st place, Eaglerock; Ray Crawford, 2nd place, JN-41.

July 3rd, Balloon Straffing Contest — Eddie Martin, Waco, and V. A. Darrell, T. M. Scout, tied for 1st place.

Bomb Dropping Contest—Eddie Martin, 1st place, Waco; Nick Mamer, 2nd place, Swallow.

15-Mile Race (100 h.p. planes and over) —Hadley Hershey, 1st place, York-Sunbean; Lt. Wm. Burroughs, USR., 2nd place, Thunderbird; V. A. Darrell, 3rd place T. M. Scout.

Parachute Jumping—Stanley Fulmer, 1st place; Walter Cahill, 2nd place.

High Speed Free-for-All—Lt. Shea, USN., 1st place, Vought VE-7; Lt. Dyer, USN., 2nd place, N. Y. Consolidated; Eddie Martin, 3rd place, Martin Monoplane; Ens. Williams, USN., 4th place, Boeing Scout; Lt. Hawkins, USN., 5th place, OU-1 (Boeing).

Ventura Race, 100-miles—Lt. H. E. Shea, USN., time 49 min. 20 sec., UE-7; Lt. K. C. Hawkins, USN., time 49 min. 30 sec., Super-Douglas with Wright motor; Lt. J. E. Dyer, USN., time 69 min. 40 sec., NY Consolidated; Harold Speer, fourth, International. Lt. Dyer had a forced landing en route.

July 4th, Upside Down Flight—Won by Art Goebel.

30-Mile Race (for 100 h.p. and over)—Lt. Burroughs, USR., 1st place, Thunderbird; Paul Richter, 2nd place, Eaglerock; Leo Nomis, 3rd place, Travel Air; Harry Speer, 4th place, International.

Balloon Straffing Contest—Frank Clark, 1st place, Stearman-Samson; Lee Brusse, 2nd place, Kinner Airster; Paul Richter, 3rd place, Eaglerock.

Dead Stick Landing Contest—Jack Frye, 1st place, Eaglerock; Dick Ranaldi, 2nd place, JN-4D; Lt. D. W. Tomlinson, 3rd place, JN-4D USN.

High Speed Free-for-All, 30 miles—Lt. D. W. Tomlinson, USN., 1st place, Travel Air, time 15 min. 13 sec.; Frank Clark, 2nd place, Stearman-Samson, time 16 min. 47 sec.; 3rd place, Lt. Dyer, USN., time 17 min., Vought VE-7; 4th place, Lt. Hawkins, USN., time 17 min. 2 sec., UO-1 Boeing; 5th place, Ens. Williams, USN., time 19 min. 15 sec., NY Consolidated.

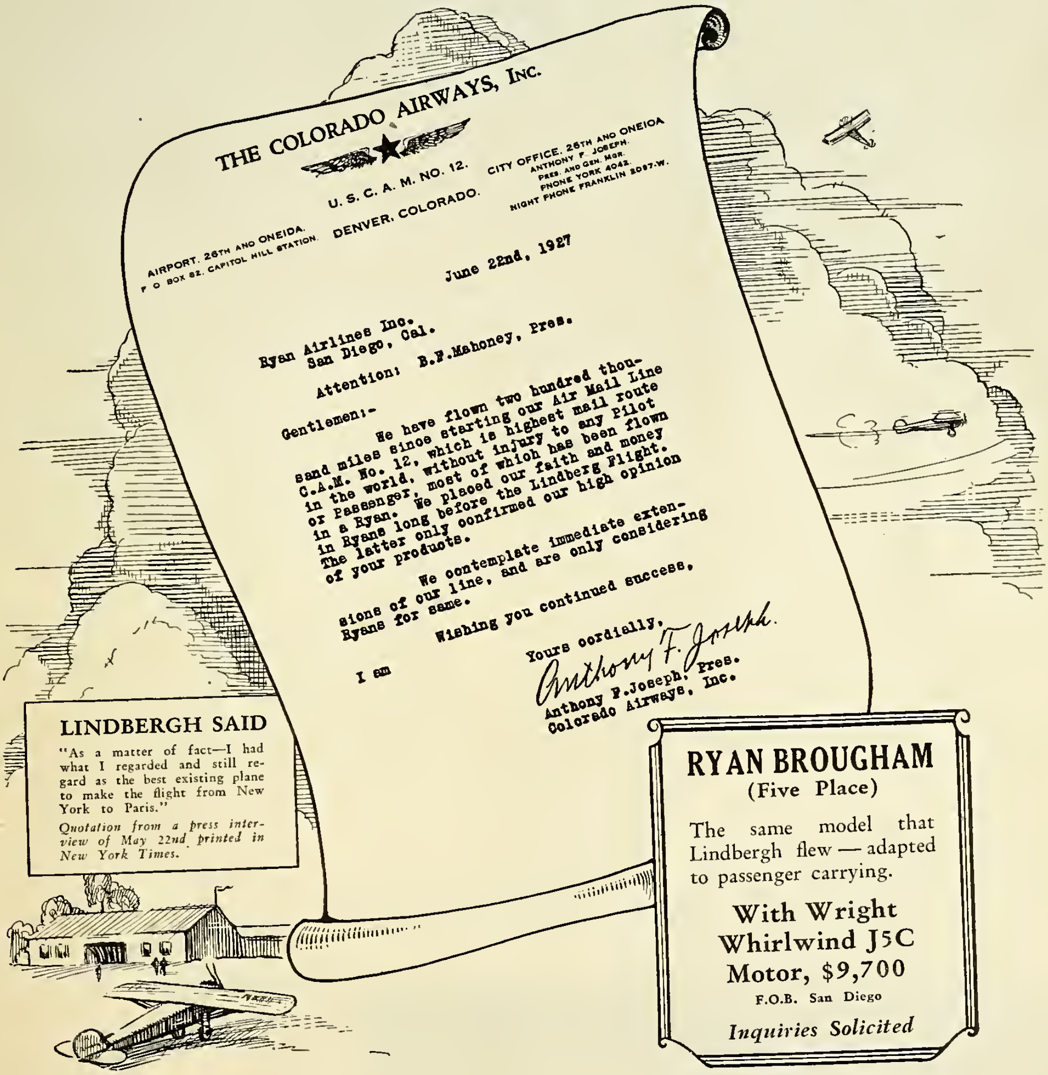
Bombing Contest—Lt. Hawkins, USN.; Lt. Seiler, USN., tied for 1st place; Jack Frye, 2nd place.

Jenny Scramble—Art Goebel, 1st place; Lt. Tomlinson, 2nd place; W. M. Gray, 3rd place.

Feature, Aviation Pilot Dodson, USN., 800 foot free parachute jump.

Some Boeing air mail planes, with Pratt & Whitney engines, to be used on the western division transcontinental route.

Only EFFICIENCY *and* DEPENDABILITY Bring Statements Like These!



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June 22nd, 1927

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Attention: B.F.Mahoney, Pres.

Gentlemen:-

We have flown two hundred thousand miles since starting our Air Mail Line C.A.M. No. 12, which is highest mail route in the world, without injury to any Pilot or Passenger, most of which has been flown in a Ryan. We placed our faith and money in Ryans long before the Lindberg Flight. The latter only confirmed our high opinion of your products.

We contemplate immediate extensions of our line, and are only considering Ryans for same.

Wishing you continued success, I am

Yours cordially,
Anthony F. Joseph
Anthony F.Joseph, Pres.
Colorado Airways, Inc.

LINDBERGH SAID

"As a matter of fact—I had what I regarded and still regard as the best existing plane to make the flight from New York to Paris."

Quotation from a press interview of May 22nd printed in New York Times.

RYAN BROUGHAM
(Five Place)

The same model that Lindbergh flew — adapted to passenger carrying.

With Wright Whirlwind J5C Motor, $9,700
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Inquiries Solicited

B. F. MAHONEY AIRCRAFT CORPORATION

OWNERS OF RYAN AIRLINES

San Diego California

CONTACTS

By Frank E. Samuels

ONE of the outstanding features of the Santa Ana Air Meet was the wonderful speed shown by the Whirlwind-motored Travel Air, owned by Ray Carpenter of Long Beach, and the daring piloting of the plane by Lieut. D. W. Tomlinson. Starting last from the line-up in the High Speed Free-for-All race he finished first, winning by over a half a lap over his nearest competitor. The turns were rounded by Tomlinson in a vertical bank, close to the ground, never at any time stalling the speed of his motor, and having at all times perfect control of his plane.

JACK FRYE of the Aero Corp., of Calif., must have a magnet on his landing gear as he always manages to win first place, the cup and the money, whenever entered in a dead-stick landing contest. He won one on July 2nd and one on July 4th at the Santa Ana Meet. Jack and Paul Richter have a monopoly on cups. One can barely enter the office of the Aero Corp., it is so full of cups won at different meets. Paul says "the only trouble is we have to pay a watchman now to look after our trophies."

ANOTHER feature of the Santa Ana Meet was the sensational race flown by Lieut. Burroughs in George Irvin's Thunderbird. The planes took off in the 30-mile 100 h.p. Commercial Speed Race on July 4th, at ten second intervals, and the Thunderbird, last to start, came in before all the others, winning the Newport Beach Legion of Honor Trophy. It was the same place that, piloted by Jack Frye, won the free-for-all race and the Aero Digest Cup at Clover Field, Santa Monica, last September. The Thunderbird was always the fastest OX-5 job on the Pacific Coast, but since it has been reconditioned by the students of the Warren School of Aeronautics, and its motor overhauled by the mechanical department of the school, it is faster than ever. Lieut. Burroughs also flew a perfect race.

ART GOEBEL, the West Coast prize stunt and up-side-down flyer, is one of the sure contestants in the big North America-Honolulu flight on August 12th. Art was the first to sign on the dotted line of an entry form and to pay in his $100. He will fly a special built Whirlwind-motored Travel Air. Up to the present he has not given out the name of his navigator but it is even betting that he will be a capable navigator, and a pilot as well, as Art is out after the bacon. We understand he is being backed by Hollywood moving picture magnates.

ANOTHER promising entry to the Honolulu flight is the new Lockheed Aircraft Corp. monoplane, recently purchased by Mr. George Hearst, publisher of the *San Francisco Examiner*. This new addition to the aviation industry of California has proven its speed and maneuverability in a round-trip flight from Los Angeles to San Francisco. Eddie Belandi flew it from Rogers Airport, Los Angeles, with a full compliment of four passengers, to San Francisco in an hour and twenty-three minutes; and the return trip, piloted by Jack Frost, with three passengers and 400 pounds of baggage, was made in an hour and five minutes. We understand that Jack Frost is to pilot the ship on the Honolulu flight with Gordon Scott, navigator, and that Mr. Hearst is financing the flight. If speed is a factor in the coming Trans-Pacific flight, some of the other planes will have a good pacemaker.

WHILE at Rogers Field, the latest Ryan J5 Whirlwind-motored Brougham, "Queen of the Yukon" paid the field a visit. This beautiful ship owned by Mr. A. D. Cruickshank, Whitehorse, Yukon is drawing a lot of attention. Pontoons are now being fitted and a set of skis made for it. As soon as finished it will start for the Yukon, where it will go on a regular run, carrying passengers, light express and possibly mail.

ANOTHER caller at the Rogers Airport while I was there was Billy Parker, test pilot, Research Dept. of the Phillips Petroleum Company of Bartlesville, Okla., in his new J5 Whirlwind-motored Travel Air. Mr. Parker purchased the plane direct from the factory at Wichita, Kans., flying it to Boston and New York and from there direct to California. Mrs. Parker is flying over the country with her husband and enjoying every minute of the trip.

A. C. Terrill, H. T. Dennison, New England Kinner representative, and W. B. Kinner.

EARL DAUGHERTY of Long Beach has a number of Long Beach business men taking instructions in flying from him. Age don't seem to make much difference when once a man gets air-minded, as two of Earl's students are well over the 50 mark. Among those who are now almost ready for their pilot's licenses are F. W. Rehbock, a Los Angeles produce man; C. C. McWhinney, an oil man from Long Beach, and Carlyle Nibley, Packard agent at Long Beach.

WHILE on my rounds, I made a call on Capt. T. Cameron Wilkinson, head of the Universal School of Aeronautics, Los Angeles' latest addition to the aeronautical industry. Capt. Wilkinson is well qualified to teach all branches of aeronautics and has the best wishes of the flying fraternity of Los Angeles.

FREDERICK "DOC" WHITNEY and J. B. Alexander, the two Waco live wires of the West Coast, have a novel way of bringing their planes from the factory to Los Angeles. They first draw lots to see who will fly the ship back; the winner buys a cheap car, drives to the factory at Troy, Ohio, sells the car on arriving there, usually for almost as much as paid for it, and flys the new plane back.

FRED HOYT left here on July 19th to make delivery of the new Stearman air mail plane. Flying first to San Francisco where the plane will have its official trial flights, Fred will then fly to Salt Lake City, where he will deliver the ship to Walter T. Varney, who will at once put it into regular service on the Pasco-Elko-Salt Lake City air mail run.

MAC SHORT has resigned as instructor at Boston "Tech" and has joined the Stearman Aircraft Corp. as associate engineer. Short and Stearman have been associated together for a number of years and their joint efforts in building aircraft have always produced planes of merit.

H. A. SPEAR, sales manager of International Aircraft Corp., accompanied by Al Ebright, recently made a demonstrating trip north, and were successful in placing orders for eighteen new International planes—sixteen F-17 four-place jobs, OX-5 motored, and two F-18 Whirlwind-motored jobs. At the same time they placed the agency for International for all Central and South American countries.

MR. MILLER of the Miller Flying Service reports very satisfactory results from the small advertisement that he is carrying in the Aero Digest Flying School section. A number of pilots who have been out of the game for some time are taking advantage of the service to put in the necessary hours for the new Government licenses.

THE 3-motored Ford cabin job, now on its way to California, will make Rogers Airport its headquarters. The long runway assures the big ship an easy take-off and plenty of landing space. A new hangar is being built for it.

SAFETY BACH ECONOMY

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BACH AIRCRAFT COMPANY
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California

VENTURA AIR MEET

By F. E. Samuels

ONE of the best conducted and most interesting air meets ever held in Southern California was successfully staged at Ventura on Sunday, July 3rd, under the Auspices of the American Legion Post. No. 18.

The contest committee, comprised of Lieut. F. M. Coray, Ventura, Lieut. J. M. Fetters, Oxnard and Earl Ovington, Santa Barbara, with Julien Hathaway and C. B. Quinn, assistants, had all arrangements well in hand and no waits or slip-ups marred the meet from the start to the finish.

Special mention should be given to the untiring work of Earl Ovington, referee, whose decisions and timing of the different events, and the perfect system that he employed, met with the approval of every contestant in the different events.

At 10.20 a. m. the first of the contestants of the Santa Ana-Ventura 100-mile race landed at the finish line—Lieut. H. E. Shea, flying a VE-7 Hisso E-4. So close behind him that one could scarcely tell which was first, came Lieut. K. C. Hawkins, flying a U O-1 Whirlwind. These two planes were from the Navy Base at San Diego as was the NY Whirlwind, flown by Lieut. J. D. Dyer. The first of the commercial planes in the race to arrive was a new 4-place OX-5 International flown by H. A. Spear, sales manager for International Aircraft Co., who arrived at 11.38 with a full compliment of passengers.

Twenty-two planes in all took part in the different events, among them being Lee Brusse, flying an Anzani-powered Kinner sport plane; Paul Richter in an OX-5 Eaglerock and Lee Willey, also in an Eaglerock, both from the Aero Corp. of Calif.; L. M. McKeen, Ventura, OX-5JN; Lieut. Tomlinson in his prize OXX-5 from San Diego; Art Goebel, Clover Field, in his OX-5JN; R. H. Renaldi, the boy aviator from Clover Field, in an OX-5JN; Leo Nomis, in his OX-5 Travel Air and Frank Clark in an OX-5 Waco, both from Clover Field; Mr. Deeds, Visalia agent for Eaglerock, in his demonstrator; W. L. Seiler, in an NB Whirlwind; S. L. Schumacher, OX-5JN; and three Hisso JN's from Griffith Park, flown by three reserve pilots, with an observer in each of the front cockpits.

A wonderful barbecue was prepared by Bill Baker, Ventura's favorite caterer, and before starting the events all of the pilots and their guests were invited to partake. I for one can assure you of its excellence, but how the pilots were able to balance their planes after that feed is st'll a mystery to me.

After lunch the first event was the Jennie Scramble, won by Lieut. D. W. Tomlinson; 2nd, Art Goebel; 3rd, Dick Ranaldi.

This was followed by an OX-5 Commercial race, with 6 entries, won by Leo Nomis in his Travel Air, time 15m. 7s.; 2nd, H. A. Spear, International; 3rd, Lee Willey, Eaglerock.

The Dead-Stick landing contest had 8 entries. This contest was won by Lieut. Tomlinson, 6 ft. 5 in. from the line, with J. B. Dyer, 2nd, 31 ft. 7 in., and Art Goebel, 3rd.

James Dole, donor of $35,000 prizes for Pacific Coast-Honolulu hop.

The Stunting Contest with three of the best stunt flyers in the country entered, was won by Art Goebel, with Frank Clark, 2nd, and Lieut. Tomlinson, 3rd. It was a close decision by the referee but the up-side down flight of five miles by Art Goebel won the decision for him.

A very pretty plane change by Al Johnson from the plane flown by Paul Richter to that flown by Art Goebel, and some fancy wing walking and acrobatics by Al won him the first prize for that event.

The Parachute Landing contest was won by W. T. Dodson from a Navy plane, with Jimmie Young from Paul Richter's plane, 2nd. Dodson's mark was 120 ft. from the mark. The third prize was given to Young.

Prizes for the events were: first, $50 and cup; second, $40; third, $25.

NORTHWEST AIR NEWS

By F. K. Haskell

SWAN ISLAND field, Portland, Oregon, one of the newest and largest in the Pacific Northwest, received its first official test by Lieut. Oakley G. Kelly flying his army plane. The test was made in the presence of city and port officials who were inspecting the new field prior to announcing it as a control point in the Pacific Air Derby between San Francisco to Spokane, Sept. 21st. Kelly pronounced the field as excellent in every respect. Major General Mason M. Patrick, chief of the Army Air Corps, in looking over the 253-acre tract set in the center of the Willamette River, pronounced it exactly the right site in every way, and also voiced his approval of the future plans which include runways and hangars. The convenience and roominess of the field were points which particularly impressed General Patrick.

UNTIL further demand necessitates a just rate of accident insurance on airplanes, the Montana State industrial accident board has fixed $5.75 for each $100 of payroll to take care of the application of the Westland Oil Company of Scobey, Mont. This was the first application of its kind under the workmen's compensation act and the rate was set temporarily.

THE Longview (Washington) Aero Club, Inc., was organized recently by Joe Ables, who will be instructor, H. L. Beverly, Jack Manning, C. Y. Bowers and Fred Hess. A new plane will be purchased, a hangar will be erected and it is planned to establish a training school and aerial passenger and freight service.

TEX RANKIN of Portland, Oregon, took one of the first and three second places in the first air carnival ever held at Hoquiam, Wash. Gerald Smith of Everett and Tacoma took one first and one second place. Ray Howard of Brady, Washington, tied with Howard Maish of Hoquiam for the third position with one first place each. Nine planes participated.

"THE Rose of Portland" is the name that has been given to the Ryan monoplane used by Lieutenant Douglas Howard of Portland on his proposed non-stop flight from San Francisco to Honolulu for the $35,000 Dole prize.

THE county commissioners of Yakima, Washington, have given assurance that they will include funds for an aviation field there in the budget for 1928. The Cascade Milling Company has offered 75 acres, north of the city, for a field and the site is being investigated by the aviation field committee.

ORGANIZATION of the Commercial Air Transport, Inc., of Everett, Washington to be capitalized at $100,000 is now assured. J. R. Scott of Everett is manager and Cliff DeFigh, army flyer, chief pilot. The company will conduct a flying field, do commercial air photography and advertising. Its first plane, an Eaglerock, is now on the ground in charge of Gerald Smith, factory pilot. A second plane will be added in September.

THE Washington Airways has been incorporated for commercial flying at Seattle, Washington, by Grant A. Stevens and Basil L. and Virgil S. Ferguson.

ADDITIONAL commercial air service for Portland, Oregon, is to be established about August 1st according to A. T. Shore, president of the Bell Line stages. The new organization, subsidiary to the stage line, will be called the Bell Line Air Service. A plane will be operated daily between Portland and Seaside and around Mount Hood. This company also announces a line from Seattle through Portland and Oakland to Los Angeles about January 1st. The Seaside-Portland service will be maintained with an Eaglerock.

THE first move toward adding an airplane patrol to the sheriff's forces of Spokane County was the announcement by Sheriff Floyd Brower that he will appoint Capt. Howard Neely of the 116th Observation Squadron to his staff as a special deputy to run down airplane liquor runners and for other emergencies.

BEACON lights to guide flyers in the air mail service have been established along the route between Pendleton and Baker, Oregon, over the Blue Mountains.

A Phenomenal Growth—There Must Be a Reason

IN February 1927 this concern was re-organized under the name of International Aircraft Corporation. The new concern began its career with four men in its employ and very few orders on hand.

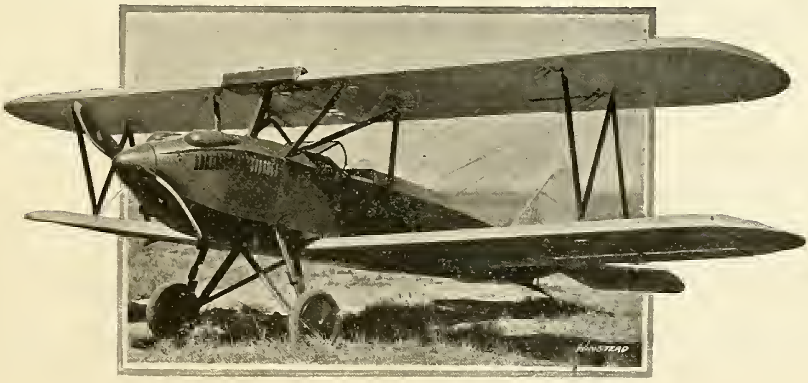
In June 1927, just four months later, International Aircraft had outgrown its first home and moved into a plant with double the floor space. Its working force had increased to 65 men and orders were pouring in so rapidly that the plant was taxed to capacity.

TODAY International Aircraft is one of the largest firms manufacturing a complete line of aircraft on the Pacific Coast.

There must be a reason.

DEALERS: International Aircraft manufactures ships of all types for every purpose. We believe our products to be the finest obtainable in design and workmanship. We solicit your investigation.

"BUILT TO A STANDARD—NOT TO A PRICE"



The International F17-3 Place commercial sportplane.

IAC BUILDERS OF "PLANES THAT FLY THEMSELVES"

INTERNATIONAL *Aircraft* CORPORATION
LONG BEACH, CALIFORNIA

AERO CORP. NEWS

By Charles F. McReynolds

SID GRAUMAN, Hollywood theatrical man and sponsor of the Los Angeles-Tokio flight, has recently purchased an Eaglerock biplane and had it painted to represent a chinese dragon. It is now being flown about southern California with a Chinese prince as passenger in order to advertise Grauman's Hollywood Chinese Theater. While this is a somewhat fantastic use for an airplane it is a good illustration of one of the many ways in which modern air vehicles can be made to fit into the scheme of the present day industrial world.

The Pacific Air Transport Co., which operates the air mail line from Los Angeles to Seattle, has recently purchased a Fokker Universal monoplane with Pratt & Whitney Wasp motor and will soon place it on the regular run carrying mail and passengers. This will be the fastest and most luxurious cabin plane in regular service in the west.

Lieut. Jack Frye, pres. of the Aero Corp. of Calif., and Charles Craddick, secy., left for New York on July 15th to take delivery on a Fokker Universal monoplane equipped with streamlined motor, hydraulic wheel brakes and self starter. The plane will be flown to Los Angeles via Fort Worth and El Paso, Texas, and will be placed in the regular passenger service of the company.

The corporation has purchased two new Eaglerock planes and is now conditioning them for the "on to Spokane" National Air Race in September. The planes will be flown from Los Angeles to Spokane and will score on a points-per-mile basis as they will not be in direct competition with the New York to Spokane flyers.

The Aero Corp. flew 1,453 passengers during June as against 475 in April and 670 in May. This record is thought to be the greatest single month's business that has ever been done by a western flying organization.

LEFT OR RIGHT HAND THROTTLES

ALEXANDER AIRCRAFT COMPANY recently sent 153 questionnaires to as many flying schools throughout the United States with the idea in view of obtaining a consensus of opinion of the use of left or right hand throttles in student training ships.

Out of the 153 questionnaires broadcast there were 79 returns; 41 schools used the right throttle and their number of registered students were 2,464; 30 schools used the left throttle and had 2,095 students enrolled; 8 schools used both left and right controls with a student body numbering 180.

This would indicate that the value of right or left control operation was about a 50-50 proposition with student instructors. Both right and left hand operators value their judgment and have good argument to back same up.

RYAN AIRLINES NOW MAHONEY AIRCRAFT CO.

THE B. F. Mahoney Aircraft Corporation, formerly known as the Ryan Airlines of San Diego, California, has been reorganized and recapitalized at $500,000. Directors of the new organization, which will continue the manufacture of monoplanes, to be known henceforth as Mahoney monoplanes, instead of the former name of Ryan monoplanes, consist of B. F. Mahoney, Mrs. Jennie L. Mahoney, mother of the president of the concern, Richard T. Robinson, Jr., W. H. Bowlus, factory superintendent, and A. J. Edwards, now director of sales.

The present plans for the company call for the production of one entire plane each working day by May 15, 1928, and by September 1, it is hoped to be building two planes a week. The present production is now slightly better than a plane a week.

A chain of sales organizations in practically every nation of Europe, South America, Central America, Asia and throughout the United States are now being established. Before the first of the year the company expects to double their personnel and are now making active preparations for enlargement of the factory.

The Mahoney monoplane of the enclosed type, similar to Colonel Lindbergh's "Spirit of St. Louis," will continue to be constructed by the company. This plane, known as the Mahoney B-1 is equipped to carry five passengers including the pilot.

Mechanics of Flight
Theory of Flight
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Win Your Wings By UNIVERSAL Home Study!!

The UNIVERSAL METHOD of HOME STUDY is the result of many years of systematic study and research work both in the United States and abroad. It covers the Science of Aeronautics thoroughly and completely.

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IF IT FLIES, WE HAVE IT!

Liberty 12-cyl. motors **$1100;** Liberty 6-cyl., **$700;** Anzani 9-cyl., 110 hp, **$450;** 6-cyl., 60 hp air-cooled radial, **$350;** Hall-Scott 4-cyl., 120 hp, **$175;** Aeromarine 140 hp, electric starter, **$900;** Union 140 hp 6-cyl., electric starter, **$375.**

BMW latest model, **$750;** Lawrance air-cooled, 2-cyl. with propeller, **$85.**

Latest type Hispano-Suiza, 300 to 390 hp, **$1,000;** Rolls Royce 6-cyl., 110 hp Hawk Model, **$675.** These motors are guaranteed brand new complete in every way, and "we don't mean maybe".

Wright E2 Hisso, **$1,000;** Model E, **$550;** Model A2, E type rods and bearings, **$500;** Liberty 12-cyl., **$700;** Liberty 6-cyl., **$450;** V2 Curtiss, **$300;** OX5, **$275;** OXX6, **$350;** Mercedes, **$500.**

All above motors are equal to new. Money back guarantee if not satisfactory to purchaser.

MAGNETOS

Dixie 81-83-85, **$15** each. Brand new Dixie 800 or 825, right or left, in original cartons, **$40** each; two for **$75.** 6-cyl. German Bosch, **$25;** Simms, **$20;** Vetrix, **$20;** Dixie for LeRhone, **$7.50;** Berling, **$20.** Parts, platinum points, for all makes. 9-cyl. latest type Splitdorf magnetos, **$45.**

PROPELLERS

Liberty, **$35** to **$50.** OX5, **$10** to **$20.** LeRhone, **$10.** Lawrence, **$12.** Hisso without copper tips, **$35;** with copper tips, **$50.** Club type OX5 and OXX6 for high altitude, **$8.** D500 Jacuzzi, slightly used, **$15.** Propellers, of different types at reasonable prices.

MISCELLANEOUS

Protector Goggles, **$5.** Resistal or Triplex, **$4.**
Send **25c** and we will mail the finest leather kid-lined helmet ever offered for **$5.50,** unlined, **$4·50;** cloth helmets, **$2.50;** genuine kangaroo leather helmets, lined with vici kid, nothing better made, **$9.00.** Any helmet purchased from us can be returned for full cash credit if purchaser is not absolutely satisfied. All colors, white, tan, black leather.

AC Spark Plugs, **25c;** Mosler Mica, **$1.00;** Mosler Lava, **35c.** French and German various type mica, lava and porcelain, cost not less than **$2** each, for **25c.** We guarantee them to be satisfactory.

We pay spot cash for new airplane or motor parts in large or small quantities. We need wheels, compasses, altimeters, instruments, carburetors. Write us what you have for quick action.

Air-driven steramlines generators (**13** volt **32** amperes) automatic cut out, bracket, propeller, everything brand new and complete (cost $125) **$17.50** each.
Electric phone, 2 helmets included, (cost **$90**) complete set **$16·**

New square core Jennie radiators, **$35.**

Dash type distance thermometers, **$6.50.** Aluminum streamline running lights, set of 3, $7.50. Dash clock 1-day **$2.25;** 8-day jewelled **$10.50.** Cane seats, upholstered backs, **$3.50.** 900 x 200 wheels, **$10** each. Tires **$10** to **$20** each. One pair large 40 x 10 inch tires, tubes and wheels complete **$135.** Pair 26 x **3** wheels tires tubes, complete **$22.** One 26-ft. silk Irvine parachute without pack or cords, otherwise perfect, **$90.** Small 25000 ft. altimeters, **$12.50** each. Dixie switches, **$1.** Switches for 2 magnetos, **$1.75.** Pair 26 x **3** wheels, tires, tubes, complete, **$22.**

Johns-Manville tachometer adapters, **$3.**

Reliance Tachometer with cable, **$16;** Jaeger, **$15.**

Best shock cord, **60c** yard; good shock cord, **25c** yard. Best Titanine dope, **$2.50** gal., **$2.20** in 10-gal. lots, **$2** in 20-gal. lots. Some old dope not guaranteed, **$1.25** gallon. Powdered aluminum, **$1** per pound. Tape, **4c** yard. AA cotton **55c** yard. Good cloth, **36c** yard, 90 inches wide, **90c** yard.

½ in. tape, linen thread, needles, everything for wing covering. Oversize OX5 wrist pins .003 and .005.

Wheels, tires, rims, spokes, tail or wing skids, engine bearers, nose plates. Air, oil and gasoline gauges.

$\frac{1}{16}$ waterproof mahogany plywood, 15⅝ inches x 11 ft., **$5** per sheet.

Government specification bolts, nuts, shackles, pins, control cable fittings, etc., the largest stock in the United States.

Jones new production head, **$18.** Airspeed indicators, complete with tube, **$12.** Tachometer cable with shaft, **$1** per foot.

Compasses, **$15.** Turn indicators, complete, **$40.**

OX5 rings, **15c;** wrist pins, **40c;** pistons, **$3;** connecting rods or main bearings, **$1** pair; cylinders, **$12** each; set of eight, **$80·**

Water inlet pipes, **$3.50** each; a set of 16 intake and exhaust gaskets for **85c.** Valve locks, 20 for **75c;** valves, **50c;** springs, **15c;** hub pullers, **$1.50.** Other parts also reasonable.

Hisso rings, American Hammered, **35c;** E connecting rods, complete set with bearings, **$125;** oil and water pump assemblies complete with bracket, **$20;** high compression pistons, **$4;** wrist pins, **60c.**

Stromberg carburetors, **$35;** Zenith **$25;** Claudel, **$20.**

Camshafts, **$18.** Crankshafts, **$50.** Crank Cases, **$150.** Used cylinder banks, **$30** to **$50.** Cam covers, **$5.** Other parts also very reasonably priced.

Parts for many airplane motors, electric starters, cylinders, etc.

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NEW KERN COUNTY AIRPORT PLANNED

By Orval Adams

IMMEDIATE development of a 200-acre "L" shaped airport near Bakersfield, Calif., which will be purchased by the Kern County Board of Supervisors, is being planned. Decision to purchase the new field and develop it into one of the finest county-owned airports in the United States, was made late in July by the Kern supervisors.

The purchase, which will be completed by August 15, will call for a consideration of $32,600, and the airport, when developed, will represent a total investment of approximately $60,000. The site is the shape of the letter "L", considered by aviation experts to be ideal. The length of the field will provide a runway for takeoffs, almost a mile in length, making possible the takeoff of heaviest passenger and commercial planes.

United States Department of Commerce officials who recently inspected the site, declared they will give the new Kern field, if present plans are followed, a triple-A rating. The field will be equipped with four-way runways not less than 2,500 feet in length; a revolving beacon and white lights outlining the field boundary, two all-steel hangars with a capacity for housing 20 planes, flood and auxiliary lights, repair shops and mechanical appliances and all equipment necessary to make the port one of the best in the West.

Two situations have brought about the plans for abandonment of the Kern airport now in use. The field is leased by the county and cannot be purchased, making the supervisors reticent to expend much money on its development, and the Standard Oil Company, which has a tremendous "farm" of oil reservoirs on the west side, plans erection of huge steel lightning arrester towers which will make night land dangerous, and reduce the value of the field runways.

CAL. "TECH" AERO CLUB

THE Aero Club of the California Institute of Technology was formed three years ago for the purpose of bringing together those interested in aviation and of stimulating interest in aeronautics around the campus. Each year the club has made trips to the aircraft factories and fields in and around Los Angeles. One trip has been made each year to San Diego to inspect the Naval Aircraft Station, and speakers have been secured to address the club.

Harry Remington, the president of the club for the year 1925-1926, was in the Air Service during the war. Several of the members are aviators. The president of the club for the last college year, Frederick Thearle, is at present finishing a plane of his own manufacture, a small single-seater stagger-decalage biplane. The fuselage and empennage are of plywood construction, the wings of conventional spruce design, and the landing gear, cabane struts and interplane struts are of steel tubing.

THE SALES VALUE OF COLOR OF A PLANE

THE International Aircraft Corporation of Long Beach, California is convinced that color plays an important part in the merchandising of aircraft as is evidenced by their policy of finishing their planes in any color scheme desired.

With the rapidly increasing number of people who are buying planes for pleasure purposes and with the cost of aircraft steadily descending to a level within the reach of the average business man, it stands to reason there will be a great many who will want to exercise their individual taste when it comes to a color scheme for their ship. Just as many of the big automobile companies now give the customer his selection of finish, so must aircraft manufacturers cater to personal choice in the matter of color.

International Aircraft not only makes the paint job optional with the purchaser but allows a selection of upholstering as well. Some of the attractive color schemes used on International planes are two tones of red, two tones of green, red and silver, green and silver and red and black.

This company reports record breaking sales this month on their two favorite models, the F-17 and the F-18. The former is the three-place sport plane which is attracting widespread attention wherever it is demonstrated. The latter is the five-place combination passenger and freight plane.

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The New Kinner 5 Cylinder Radial Air-cooled 100 h.p. motor is now in quantity production and is available to the trade. This motor installed in a Kinner Airster outperforms all 3 place commercial planes up to 100 h.p.

INSTALLED IN YOUR 90 or 100 h.p. plane will give you super performance

On July 10th this motor cruised at 1400 r.p.m., consuming only 8 gallons of gasoline and 1 quart of oil in exactly 2 hours.

It is equipped with two Scintilla aircraft magnetos and Zenith carburetor and is high grade in every respect. Manufactured in our own plant.

Deliveries can be made at present in 30 days after receipt of order.

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NEWS OF THE AIR SERVICES

1927 MACHINE GUN AND BOMBING MATCHES

THERE was a total of 53 contestants in the Machine Gun and Bombing Matches held at Langley Field, Va., June 5 to 20. Of these contestants, 38 were Air Corps officers, 5 Marine Corps officers and 10 National Guard officers. Every phase and every department of the competition was operated very smoothly and efficiently throughout.

As an index to the high degree of discipline of Air Corps personnel in performing duties incident to their arm, it is stated in the official report that the 1927 competition is without parallel, and that this can be better realized when it is considered that contestants came from all parts of the United States and from Panama.

Captain Hugh M. Elmendorf, of the 1st Pursuit Group, Selfridge Field, Mich., was the winner of the contest for pursuit pilots. With a score of 901.2 he outclassed the ten other competitors in this contest. Members of the Pursuit Group also took second, third and fourth places in this competition. Of the eleven contestants, six were members of the Army Air Corps and five of the Marine Corps.

The match for observation and attack pilots, in which 17 contestants were entered, resolved itself into a race for first place between Lieut. Earl E. Partridge, of Kelly Field, and Lieut. Elmer J. Rogers, of Langley Field, the former winning with a score of 656.6, and the latter scoring 638.2.

Lieut. James E. Parker, of France Field, Panama Canal Zone, was the winner of the Observer's Match, Lieut. Arthur Thomas, of Fort Sam Houston, Texas, taking second place and Lieut. Harold C. King, of France Field, Panama Canal Zone, third place. There were 20 competitors in this contest.

Four teams were entered in the Bombardment Match, two from Langley Field, one from Phillips Field and one from France Field. Lieuts. W. T. Larson and H. C. King, the team representing France Field, won first place with a score of 1,519. A Langley Field team, with a score of 1,509, won second place, Capt. W. H. Hale and Lieut. K. N. Walker being the members thereof.

NAVY CONTRACTS FOR PLANES AND ENGINES

THE Navy Department recently awarded contracts for 54 planes and 48 air-cooled engines, at a total cost of $1,647,478.

The Curtiss Aeroplane and Motor Co., received a $513,191 contract for eighteen shipboard fighters to be equipped with Pratt & Whitney 400 h.p. Wasp engines.

The Chance Vought Corp. received contracts totaling $597,050 for twenty O2U observation planes and for an experimental fighter.

The Consolidated Aircraft Corp. was awarded a $127,137 contract for fifteen NY-2 training planes to be equipped with Pratt & Whitney Wasp engines.

The Wright Aeronautical Corp. was given a $610,000 contract for forty-eight engines and spare parts. These engines will be 9-cylinder fixed radial air-cooled type, rated at 500 h.p. each.

2nd GOODFELLOWSHIP AIRPLANE TOUR

THE second Airplane Goodfellowshhip Tour of the Chamber of Commerce of Kansas City, Mo., from June 16th to 18th, served to create added interest in aviation at the places visited. Stops were made at Chanute, Kansas and Tulsa, Oklahoma, on June 16th; Muskogee, Okmulgee and Oklahoma City, Okla., on the 17th, and Ponca City, Okla.; Wichita, Kansas, and Emporia, Kansas, on the 18th. The total mileage for the trip was 696 or 2,784 miles for the four Army planes composing the flight. Lieut. Isaiah Davies, in command of the flight, piloted a DH-4M-2, while three JNS planes were piloted by Air Corps Reserve officers.

The schedule prepared for this tour was maintained throughout, all planes starting returning to the home station, Richards Field, Mo., one hour ahead of time.

At each city visited the flight was met and entertained by the Chamber of Commerce of that city. At each luncheon and dinner advantage was taken of the opportunity to stimulate interest in aviation, and in every case the airmen's hosts were most interested in the subject.

MAJOR DARGUE ENDS U. S. GOOD WILL TOUR

TRAVELING a distance totaling more than 10,000 miles, visiting more than 100 cities in 34 States of the Union, with speaking engagements in 70 of them, meeting all dates and adhering closely to the seven weeks' schedule mapped out prior to the flight, sum up briefly what was accomplished on the recently concluded "Good Will Tour" of the United States made in an amphibian airplane by Major Herbert A. Dargue, Commander of the Army Pan-American Flight, accompanied by Mr. Walter O. Lochner, of Trenton, N. J., president of the National Association of Commercial Secretaries.

Carrying a message of good will from Latin-America to the people of the United States, the airmen were enthusiastically received everywhere, large crowds being present at the landing field at each place visited to welcome them and later to attend the entertainments given in their honor.

Captain Ross G. Hoyt, piloting an O-2 airplane, with Sergeant D. B. Boozer, mechanic, accompanied Major Dargue. The escorting airmen rendered very valuable service during the flight, aiding in refueling the amphibian, checking over all adjustments, connections, etc., and, in a number of instances, first making the landing at certain localities to determine the suitability of the field for landing by the amphibian.

At all places visited Major Dargue found a general wave of enthusiasm for aviation, lively interest being manifested in the establishment of airports, the increase in production of airplanes, and in the purchase of airplanes for individual use.

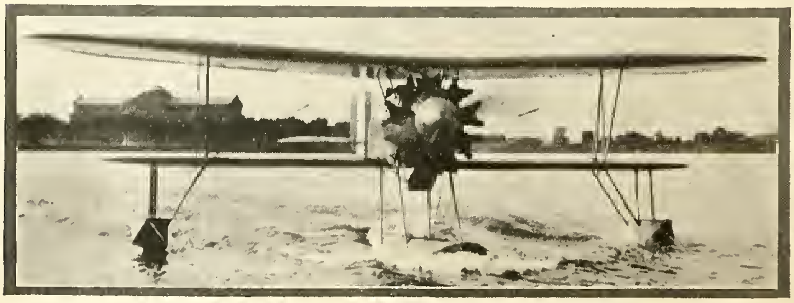
LT. CHAMPION BREAKS OWN ALTITUDE RECORD

ON July 4th, 1927, Lieutenant C. C. Champion, Jr., U. S. N., in the Navy "Apache" seaplane reached an altitude of 37,995 feet, exceeding his previous record established May 5th by over 4,500 feet.

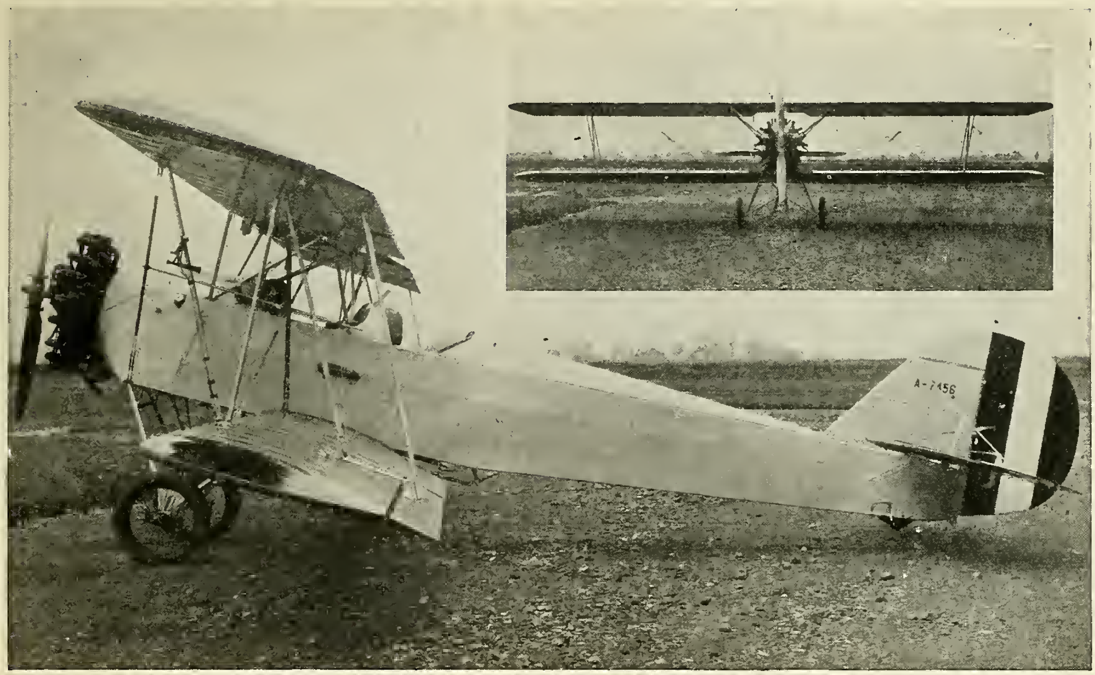
The "Apache" plane is equipped with a Pratt & Whitney "Wasp" engine and a "Root" type supercharger.

This record is quite remarkable when it is considered that it exceeds the previous record held by the French by more than 7,000 feet.

On July 25th, Lieutenant Champion made what was first thought to be another world's altitude record for airplanes. The "Apache", fitted with wheels instead of floats, took off from Bolling Field and was thought to have reached a height of nearly 48,000 feet. The cylinders burst and destroyed one of the recording barographs. Upon calibration of the second barograph it was found that his altitude did not exceed 39,000 feet, although the altimeter indicated 48,000 feet. Lieutenant Champion landed without further damage to the ship in a cornfield nearby.



The record-breaking Wright "Apache" with a Pratt & Whitney engine.



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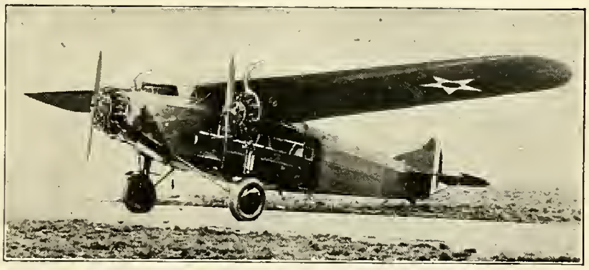

Maitland's Pacific Flight Plane Equipped with Belden Shielded Wire

MAITLAND'S giant Fokker in record-breaking flight to Hawaii used Belden Wire for:

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2—All radio shielded wiring.
3—All wiring and connections of the Earth Inductor Compass.

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Consult Belden Airplane Engineers regarding specially designed airplane harness — either shielded or unshielded — or other wiring problems.

ARMY AND NAVY AIR SERVICE ORDERS

ARMY AIR CORPS ORDERS

THE following Army Air Corps orders have been issued as of the dates indicated in brackets:

Acheson, 2d Lt. George Robert, ordered to active duty at Fort Crockett, Tex. (July 8)

Ash, 2d Lt. Lloyd Radcliffe, Duhlin, Ga., to Brooks Field, Tex., for training (June 29)

Atkinson, 2d Lt. Joseph Hampton, from Dallas, Texas, to Marshall Field, Fort Riley, Kans. for duty. (June 24)

Blackburn 1st Lt. Lloyd C., relieved from duty at Air Corps Technical School, Ill., and assigned to duty at Fort Riley, Kans. (July 9)

Brewer, 2d Lt. Lewis, Griffin, Ga., to Brooks Field, Tex., for training. (June 29)

Brower, Capt. Gerald E., assigned to 46th Headquarters Sqdn., McCook Field, Ohio, upon completion of temporary duties at Boston airport. (July 18)

Bruckhart, 2d Lt. John Philip, San Francisco, Calif., to Brooks Field, Tex., for course of instruction. (June 24)

Caperton, 2d Lt. Arthur Lefroy, Garden City, N. Y., ordered to duty at Selfridge Field, Mich. (June 27)

Carson, 2d Lt. James White, San Diego, Calif., to active duty at Marshall Field, Fort Riley, Kans. (June 27)

Cathey, 2d Lt. James Willis, Atlanta, Ga., to Brooks Field, Tex., for training. (June 29)

Chailie, 2d Lt. Joseph Hallfred, Miami, Fla., to Brooks Field, Tex., for training. (June 29)

Chaney Maj. James E., assigned to duty as commandant of Air Corps Advanced Flying School, Kelly Field, Tex. (July 13)

Chiappino, 2nd Lt. Lawrence John, San Jose, Calif., to Brooks Field, Tex., for course of instruction. (June 24)

Chilcoat, 2d Lt. Milton, ordered to Brooks Field, Tex., for course of training in Air Primary Flying School. (July 25)

Clark, Capt. Charles P., leave of absence 2 months. (June 29)

Colgan, Capt. John G., relieved from assignment at Fairfield air intermediate depot, Ohio, detailed to duty with Organized Reserves of Fifth Corps Area. (July 25)

Collins, 1st Lt. John Ayers, Dearhorn, Mich., ordered to duty at Langley Field, Va. (June 27)

Cook, 2nd Lt. Howard B., Tustin, Calif., to Brooks Field, Tex., for course of instruction. (June 24)

Cook, 2d Lt. Warren Stewart, Kansas City, Mo., to Brooks Field, Tex., for training. (June 29)

Covington, 2d Lt. Duane Monroe, Seattle, Wash., to Brooks Field, Tex., for course of instruction. (June 24)

Creighton 1st Lt. Neal, leave of absence 2 months and 15 days. (June 29)

Crosswell, 2d Lt. William Jefferson, Atlanta, Ga., to Brooks Field, Tex., for training. (June 29)

Daniel, 2d Lt. James Lester, jr., Alburquerque, N. M., to active duty at Marshall Field Fort Riley, Kans. (June 27)

Dexter, 2d Lt. Julian Stanley, Boston, Mass., to duty at Bolling Field, D. C. (June 24)

Dixon, 2d Lt. George Martin, Berkeley, Calif., to Brooks Field, Tex., for course of instruction. (June 24)

Donohue, Capt. Guy Francis, ordered to active duty at Langley Field, Va. (July 21)

Eilson, 1st Lt. Carl Benjamin, ordered to Langley Field, Va., for duty with a tactical unit of the Air Corps. (July 23)

Ellis, Capt. Robert Edmonston, Paterson, N. J., to Bolling Field, Md., for training. (June 23)

Ellis, 2d Lt. Rohert Richardson, Warren, Ohio, to Brooks Field, Tex., for course of instruction. (June 24)

Emmonds Maj. Delos C., relieved from assignment at Crissy Field, Calif., to duty in office of Chief of Air Corps. (June 27)

Enos, 2d Lt. Louis Howard, San Francisco, Calif., to Brooks Field, Tex., for course of instruction. (June 24)

Fitzgerald, Major Shepler W., assigned to duty as commandant of Air Corps Primary Flying Schools, Brooks Field, San Antonio, Tex. (July 13)

Frierson, 1st Lt. Samuel G., detailed as student at Massachusetts Institute of Technology. (July 12)

Glantzherg, 2d Lt. Frederic Ernst, ordered to Brooks Field, Tex., for course of instruction. (July 18)

Graham, Lt. Col. Harry, relieved from assignment at Rockwell air intermediate depot, to Dayton, Ohio, reporting to chief of material division. (June 27)

Grisham, 1st Lt. James L., ordered to March Field, Riverside, Calif. (July 13)

Hamilton, 2d Lt. Kirk, Floydada, Tex., to Brooks Field, Tex., for training .... (June 29)

Hamlin, 1st Lt. Winfield S., ordered to Fort Sam Houston, Tex., for duty with Air Corps. (July 14)

Hayes, 2d Lt. Wilbur Mead, Berkeley, Calif., to Brooks Field, Tex., for course of instruction. (June 24)

Hazen, 2d Lt. Robert Ingersoll, from Aherdeen Proving Ground, Md., to duty at Bolling Field, Anacostia, Md. (July 2)

Houghton, Capt. Junius H., promoted to major. (July 15)

Inskeep, 2d Lt. Harry Vincent, Dorchester, Mass., to Brooks Field, Tex. for training. (June 29)

Jacques, 2d Lt. John Reede, Berkeley, Calif., to Brooks Field, Tex. (June 24)

Jenner, 2d Lt. Melvin Alfred, Arlington, Wash., to Brooks Field, Tex., for training. (June 29)

Jones, 1st Lt. Ulysses G., leave of absence 1 month. (June 28)

Kauffman, 1st Lt. Stephen Timothy, Kansas City, Mo., ordered to duty at Langley Field, Va. (June 27)

Kelly, 2d Lt. Henry Jervey, Augusta, Ga., to Brooks Field, Tex., for training (June 29)

Krick, 2d Lt. John Richard, Danville, Ind., to Brooks Field, Tex., for course of instruction. (June 24)

Landesherg, 2d Lt. Julius Theodore, Savannah, Ga., to Brooks Field, Tex. (June 29)

Lieth, 2d Lt. Gardner Lawton von der, San Francisco, Calif., to Brooks Field, Tex., for course of instruction. (June 24)

Macnair, 2d Lt. George Henry, ordered to active duty at Fort Crockett, Tex. (July 8)

Mallory, 2d Lt. Halsey LaDue, Decatur, Ga., to Brooks Field, Tex., for training. (June 29)

Martin, 2d Lt. William Stanton, Wash., to Brooks Field, Tex., for training. (June 29)

McDaniel, Capt. Arthur B., ordered to Duncan Field, San Antonio, Tex. (July 13)

Morris, 1st Lt. David A., relieved from detail in Air Corps, assigned to 8th Engineers, Fort Bliss, Tex. (July 23)

Mull, 2d Lt. Archihald Marison, jr., Sacramento, Calif., to Brooks Field, Tex. (June 24)

Mulzer Capt. Leslie Granger, from Columbus, Ohio, to Bolling Field, D. C. (June 24)

Nelson, 1st Lt. Erik H., relieved from assignment at Dayton, Ohio, ordered as Air Corps representative at Curtiss factory. (June 27)

Nelson, 2d Lt. Paul B., from Kelly Field, Tex., to Second Division, Fort Sam Houston, Tex. (June 24)

Nelson, 2d Lt. Paul B., transferred Coast Artillery Corps, assigned to Fort Winfield Scott, Calif. (July 18)

Neville, 2d Lt. Forest Lynne, ordered to active duty at Fort Sam Houston, Tex. (July 8)

Olsen, 2d Lt. Raymond, Oakland, Calif., to Brooks Field, Tex., for course of instruction. (June 24)

O'Neal, 2d Lt. Roy Snow, ordered to active duty at Bolling Field, Anacostia, D. C. (July 8)

Ott, 2d Lt. Francis William, from Cleveland, Ohio, to active duty for training at Maxwell Field, Montgomery, Ala. (July 1)

Oveacker, 2d Lt. Charles Bernard, Mitchel Field, L. I., to active duty for training. (July 2)

Prindle, 2d Lt. Hoyt, ordered to active duty at Selfridge Field, Mich. (July 6)

Reagan, 1st Lt. Walter Freemont, ordered to active duty at Wright Field, Dayton, Ohio. (July 21)

Roscoe, 2d Lt. Keith, ordered to active duty at Selfridge Field, Mt. Clemens, Mich. (July 8)

Saville, 2d Lt. Gordon Philip, Mitchel Field, L. I., to active duty for training at same post. (July 2)

Schwoheda, 2d Lt. Leslie Harry, Petaluma, Calif., to Brooks Field, Tex., for training. (June 29)

Scott, 2d Lt. Clayton Allen, Ashland, Ky., to Brooks Field, Tex., for training. (June 29)

Shanahan 2d Lt. Paul Ellis, Mount Vernon, Ill., to Brooks Field, Tex. for training. (June 29)

Springer, 2d Lt. Allen Ralph, ordered to active duty at Aberdeen Proving Grounds, Md. (July 8)

Stenseth, 1st Lt. Martinus, leave of absence 1 month and 15 days. (July 13)

Stitt, 1st Lt. Donald G., relieved from duty at Post Field, Fort Sill, Okla., to accompany 23rd Photo Section to March Field, Calif., remaining in command of that organization. (June 24)

Stowel, 2d Lt. George Ferry, ordered to active duty at Langley Field, Hampton, Va. (July 8)

Templeton, 2d Lt. Frederic Eastland, Seattle, Wash., to Brooks Field, Tex. for training. (June 29)

Towner, 2d Lt. Archibald Reed, ordered to active duty, reporting to Chief of Air Corps. (July 25)

Tully, 1st Lt. Terence J., from Fort Sam Houston, Tex., to 13th Infantry, Boston Harbor, Mass. (June 24)

Walter, 2d Lt. Ivan Raymond, Milton, Mass., to Brooks Field, Tex., for training. (June 29)

Weddington, 1st Lt. Leonard D., assigned to Brooks Field, San Antonio, Tex., for instruction. (July 18)

Wetherhold, 2d Lt. Louis Everette, Princeton, Ill., to Brooks Field, Tex., for course of instruction. (June 24)

Whatley, 2d Lt. Ben Jett, McRae, Ga., to Brooks Field, Tex., for training. (June 29)

Wisehart, 1st Lt. Harry C., leave of absence 1 month and 15 days. (June 29)

Woolard, 2d Lt. Herman Franklin, ordered to Maxwell Field for duty with a tactical unit of the Air Corps. (July 22)

Wright, Capt. Burdette S., relieved from duty at Kelly Field, Tex., to duty in office of Chief of Air Corps. (July 1)

NAVY AIR SERVICE ORDERS

THE following Navy air orders have been issued as of the dates indicated in brackets:

Baker, Lt. (j.g.) James E., detached VS Sqdn. 2B, Aircraft Sqdns., Battle Flt. (July 19)

Baugh, Lt. Harry V., detached aide on staff, Aircraft Sqdns., Battle Flt., to Gen. Inspr. of Nav. Aircraft, Eastern Dist. New York. (June 29)

Broussard, Ens. Clarence, detached *U.S.S. Maryland,* to *U.S.S. Langley.* (July 23)

Chisum, Maj. Jenner Y., relieved from detail with Organized Reserve of the Ninth Corps Area, to duty in connection with procurement planning at San Francisco, Calif. (June 30)

Cleaves, Lt. (j.g.) Willis E., detached Nav. Air Sta., Pensacola, Fla., to VJ Div. 2, Aircraft Sqdns., Sctg. Flt. (July 9)

Connell, Lt. Byron J., detached VS Sqdn. 2B, Aircraft Sqdns., Battle Flt., to VO Sqdn. 2B, Aircraft Sqdns., Battle Flt. (July 18)

Duff, Capt. Edward A., (Ch. C.) detached Nav. Air Sta., Lakehurst, N. J., to Navy Yard, Philadelphia, Pa. (June 27)

Francis, Ens. Dennis L., detached *U.S.S. Seattle,* to c.f.o. *U.S.S. Saratoga,* Am. Brown Boveri Corp., Camden, N. J., and on board when commissioned. (June 25)

Grow, Lt. (j.g.) Bradford E., detached VJ Sqdn. 1, Aircraft Sqdns., Battle Flt., to VX Experimental Unit, Aircraft Sqdns., Sctg. Fleet. (June 29)

Harrill, Lt. Comdr. Wm. K., detached Bu. Aeronautics, to duty as aid to Asst. Secretary of Navy for Aeronautics. (June 24)

Haynes, Lt. Phil L., orders March 28, 1927, modified, to VO Sqdn. 6, Aircraft Sqdns., Sctg. Flt. (July 15)

Hitchcock, Lt. Norman R., detached Nav. Air Sta., Pensacola, Fla., to VO Sqdn. 1B, Aircraft Sqdns., Battle Fleet. (July 22)

Hutchison, Lt. Percy J., (S.C.) detached *U.S.S. Vestal,* to Aircraft Factory, Navy Yard, Philadelphia, Pa. (July 12)

Johnson, Lt. (j.g.) Francis B., detached VT Sqdn. 2, Aircraft Sqdns., Battle Flt., to Nav. Air Sta., Coco Solo, C. Z. (June 30)

Kieffer, Lt. Comdr. Henry M., detached Nav. Air Sta., Nav. Oper. Base, Hampton Roads, Va.. to temp. duty Nav. Air Sta., in heavier-than-air craft, Hampton Roads, Va. (July 16)

Lake, Lt. Burton G., detached command *U.S.S.* O-7; to Asst. Inspr. of Nav. Mat'l. Works of the Pratt & Whitney Aircraft Corp., Hartford, Conn. (July 19)

Leighton, Lt. Comdr., Bruce G., detached duty aide to Asst. Secretary of Navy for Aeronautics, to duty Bureau of Aeronautics. (June 24)

MacMahan, Lt. (j.g.) Donald S., detached Nav. Air Sta., Pensacola, Fla., to VJ Sqdn. I, Aircraft Sqdns., Battle Flt. (July 9)

McMahon, Lt. Frederick W., detached Nav. Air Sta., Pensacola, Fla., to Nav. Air Sta., Pensacola, Fla., as aide to Rear Adm. Frank B. Upham. (July 13)

Maginnis Ens. Jack,, uncompleted portion orders July 2, 1927, revoked; to duty c.f.o. *U.S.S. Saratoga.* (July 22)

Marshall, Lt. (j.g.) Ted C., detached *U.S.S. Nevada,* to c.f.o. *U.S.S. Saratoga.* (July 9)

Parsons, Comdr. Charles E., (S.C.), detached coordinator for traffic, Arlington Bldg., Washington, D. C., to c.f.o. *U.S.S. Saratoga.* (July 6)

Perrill, Ens. William K., detached *U.S.S. Pennsylvania,* to c.f.o. *U.S.S. Saratoga.* (July 23)

Pottle, Lt. (j.g.) Valentine L., detached *U.S.S. Bainbridge,* to c.f.o. *U.S.S. Saratoga.* (July 9)

Pratt, Ens. Cleveland F., to temporary duty Nav. Air Sta., Hampton Roads, Va., for a course of instruction in flight training on July 5, 1927. (July 20)

Rodd, Lt. Herbert C., detached VS Sqln. 2B, Aircraft Sqdns., Battle Flt., to VO Sqdn. 2B, Aircraft Sqdns., Battle Flt. (July 23)

Seifert, Lt. George P. (S.C.) detached Nav. Aircraft Factory, Navy Yard, Philadelphia, Pa., to Aircraft Sqdns., Battle Fleet. (July 16)

Simard, Lt. Cyril T., to duty *U.S.S. New Mexico;* orders May 23, 1927 to VO Sqdn. 2, Aircraft Sqdns., Battle Flt., revoked. (June 23)

Soucek, Lt. (j.g.) Appollo, detached Nav. Aircraft Factory. Navy Yard, Philadelphia, Pa., to Bureau of Aeronautics. (June 29)

Stonestreet, Lt. Comdr. Martin B., detached VX Experimental Unit, Aircraft Sqdns., Sctg. Flt., to command Observation Sqdn., 3S, Aircraft Sqdns., Sctg. Flt. (July 22)

Thompson, Ens. Arthur B., uncompleted portion desp. orders April 29, 1927, to Asiatic Station, revoked; to temp. duty, Nav. Air Sta., Pensacola, Fla. (June 29)

Toomey, Lt. (j.g.) Humphrey W., detached VO Sqdn., 2B (*U.S.S. Mississippi* Aircraft Sqdns., Battle Flt., to Nav. Air Sta., San Diego, Calif. (July 25)

Walker, Lt. (j.g.) Charles H., detached Rec. Ship, San Francisco, to c.f.o. *U.S.S. Lexington.* (July 9)

Wilson, Comdr. Eugene E., detached Bureau of Aeronautics, to Aircraft Sqdns., Battle Flt. (July 9)

Wiltsie, Lt. Irving O., detached Nav. Air Sta., Pensacola, Fla., to VO Sqdn. 3S, Nav. Air Sta., Hampton Roads, Va. (July 25)

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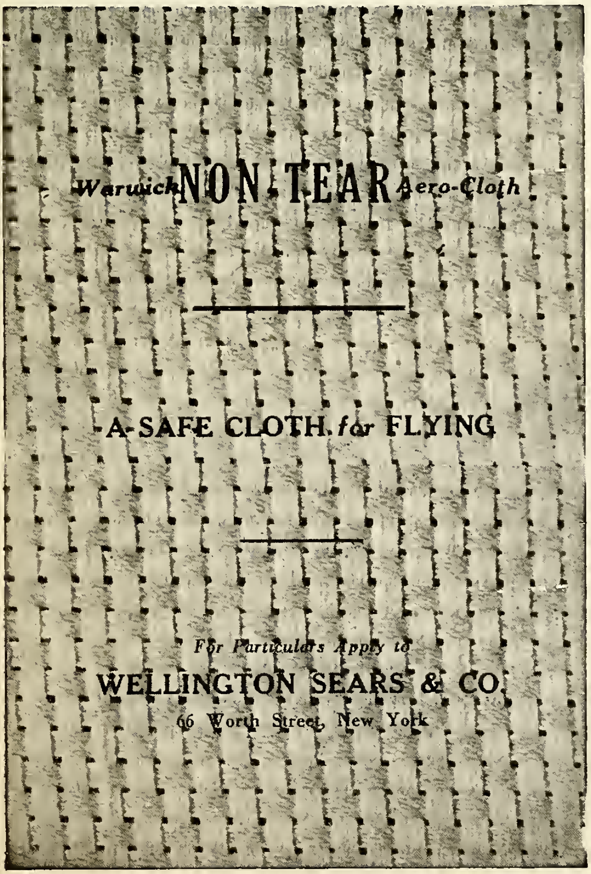

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THE AERONAUTICAL INDUSTRY

DETROIT AIR NEWS

By Frank Bogart

WHEN Detroit receives her native son, Colonel Charles A. Lindbergh, on August 11, she will be able to tell him and the entire world that the seven year struggle to establish a proper municipal airport is at an end.

A mile square site 12 miles from the City Hall, on through traffic arteries that make a 25-minute trip possible between the two points at all times, has recently been agreed upon. The property owners are being given the price they demand and the land is to be leased by the Wayne County board of supervisors until November 28, when a bond issue to purchase the land outright will be laid before the people. By coöperation of railroad executives the site will be provided with facilities to make it suitable for industrial purposes.

Detroit will thus have its own airport, together with the Ford and Grosse Ile ports, Selfridge Field and two other auxiliary landing fields in operation.

RAY COOPER, who managed the third annual National Air Tour for the Edsel Ford reliability trophy, has been placed in charge of arrangements for next year's tour by the Detroit Board of Commerce. But his immediate task will be the management of the International Balloon Race for the Gordon Bennett Trophy, September 10. Edsel Ford has put up $5,000 of the $25,000 needed for this event, the oldest sporting classic of the air, which has not been held in the United States since 1920, at Birmingham, Ala. Detroit will have an entry on the American team, E. J. Hill, who placed second in the national race May 30. The other U. S. pilots are Ward Van Orman of Akron and Captain Kepner, U. S. Army. There will be 13 other entries from seven foreign nations.

AT the present writing there is no indication what representation Detroit will have in planes and pilots at the National Air Races in Spokane September 22, 23 and 24, or in the transcontinental derby from New York to the West Coast the three days preceding the races.

CHIEF interest is centering on the preparations for several long distance flights, in all but one of which Stinson machines are to figure. Edward Schlee has set August 11 for the start of his round the world flight in the monoplane in which Eddie Stinson took the Ford trophy last month. Billy Brock will be the pilot-navigator. The pair hope to get through in 15 days. Brunswick, Ga., winter home of several wealthy Detroiters who have given substantial financial backing to aviation projects, has bought a Stinson monoplane in which Paul Redfern, 25-year-old pilot who has recently been flying for the Coast Guard on the South Atlantic coast, will attempt a 4,300-mile flight from Brunswick to Rio de Janeiro. Two Canadian groups have placed orders for Stinson machines, one to fly from London, Ont., to London, England, the other to link Windsor Ont., with Windsor, England. In both cases return flights are being contemplated. Redfern is to make his effort alone, a la Lindbergh. He will set out the fore part of this month, having left here July 27.

THE Ford Motor Company has sent its first tri-motor transport to the Pacific Coast, a syndicate composed of Los Angeles business men having purchased it to be the nucleus of an air line that may eventually reach into Mexico. The same parties are also interested in the proposal to offer scenic air trips through the Yellowstone, Royal Gorge and Grand Canyon, using Ford all-metal airplanes.

LANSING AIR NEWS

By G. W. Hawkins

COINCIDENT with the progress which is so noticeable at other points in Michigan in equipping and maintaining airports and landing fields Lansing is taking steps to place the Capitol City Airport on a scale equal to or above any field in the state.

A hangar capable of housing four ordinary ships has been constructed recently and a wind cone has been erected on a 70-foot pole near the hangar. Negotiations are under way for the installation of flood lights on the field, C. A. Hooker, representative of the Westinghouse Electric & Mfg. Co., of Pittsburgh, Pa., having visited the field and made the estimate for airport officials.

An air circus, the first event of its kind to be staged at the Capitol City airport, was put on by the Davis & Felix Airways of Battle Creek and Lansing on June 19. Approximately 5,000 people from Lansing and vicinity packed the parking place on the field to view the events.

Additional interest in flying, both as a pleasure and in training for active work in the science, has been actuated at the field as a result of the opening of a branch in Lansing by the Davis & Felix Airways of Battle Creek for passenger flights and student training.

F. C. Davis and J. Felix, owners of the air transportation firm, and actively engaged in its activities, visited Lansing early in May, and after a survey of the airport facilities and of the attitude of the Lansing people towards aeronautics, decided favorably upon locating their first outside branch here.

Austin R. (Pat) Narrin, the popular Lansing flyer, and vice-president of the Michigan Aircrafters' Association, is in full charge of the company's Lansing branch.

Drucker & Baltes.

Commander Byrd, Clarence Chamberlin and Lieuts. Noville, Acosta, and Balchen—guests of honor at New York City's dinner.

WE DEDICATE THIS PAGE

to our admiration for and appreciation of those men whose courage and skill made the practically simultaneous flights to Hawaii and France possible:

* * *

LIEUT. LESTER J. MAITLAND, U. S. Army Air Corps
LIEUT. ALBERT F. HEGENBERGER, U. S. Army Air Corps
The U. S. Air Corps Engineering Division, McCook Field, Dayton, Ohio

* * *

COMMDR. RICHARD E. BYRD, U. S. Navy
LIEUT. GEORGE O. NOVILLE, U. S. Naval Reserve
BERT ACOSTA
BERNT BALCHEN

* * *

Also to appreciative remembrance of the first and only non-stop flight across the American continent, May 1923: Lieut. Oakley G. Kelly and Lieut. J. A. Macready, U. S. Army Air Corps

* * *

THE HIGH STANDARD OF **FOKKER** AIRCRAFT IS INDICATED BY THE CHARACTER OF THE MEN WHO SELECTED THEM FOR SUCH FLIGHTS

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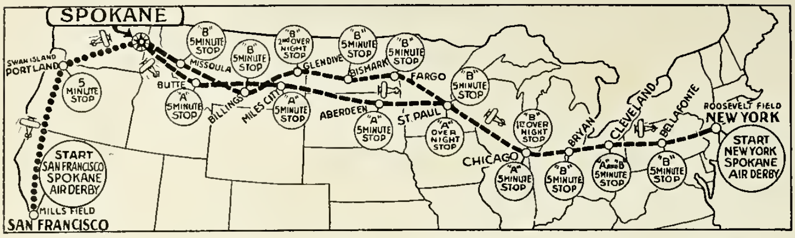
NATIONAL AIR RACES and AIR DERBIES



Routes of the **New York-Spokane and San Francisco-Spokane Air Derbies.**

FIFTY thousand dollars in prizes and many valuable trophies will be awarded to the winners in the National Air Races at Spokane, Washington, September 23 and 24; the National Air Derby, New York to Spokane, September 19 to 21, and the Pacific Coast Air Derby, San Francisco to Spokane, September 21.

The National Air Races will be held at Spokane's Municipal Airport, under the auspices of the National Aeronautic Association. Fifteen thousand dollars in prizes and valuable trophies have been awarded for this event. They are divided into three classes: military, civilian and commercial planes.

Each of the twelve events in the National Air Races must have at least four, and not more than forty entries. The events, and prizes offered, follow:

Free-for-all (civilian only) 800 cubic inch. Prize money, $2,500 divided $1,000, first; $600, second; $400, third; $250, fourth; $150, fifth and $100 sixth.

National guard race (military). Prize money, $1,000 divided $500, first; $300, second; $150, third and $50 fourth.

Light commercial speed and efficiency (civilian only). For the Aviation Town and Country Club of Detroit trophy. Prize money $2,500 divided $500, first; $250, second; $100 third. Efficiency $900, first; $500 second and $300 third.

Trophy race (civilian only) 510 cubic inch. Prize money, $2,000 divided $1,000, first; $600, second and $400, third.

For observation type (military) 2-place planes for Liberty Engine Builders' trophy. Prizes, individual trophies to be awarded first, second, third and fourth winners.

Large capacity airplanes (military). Prizes, individual trophies to be awarded first, second, third and fourth winners.

For pursuit type planes, closed event for pilots of the First Pursuit Group. Prizes—individual trophy awards for first, second, third and fourth winners.

Air transport speed and efficiency races (civilian) for the Detroit News Air Transport Trophy. Prize money $2,500. Speed, $1,250, first; $750, second; $200, third. Efficiency, $1,250, first; $750, second; $300, third; and $200, fourth.

Free-for-all pursuit race (military).—Prizes—individual trophies to be awarded first, second, third and fourth winners.

For light airplanes (civilians) 80 cubic inch displacement or less. Prize money, $1,000 divided $500, first; $250, second; $150, third and $100 fourth.

Sport plane race (civilian) for motors of 300 cubic inch or less. Prize money $1,000 divided $500, first; $250, second; $150, third and $100 fourth.

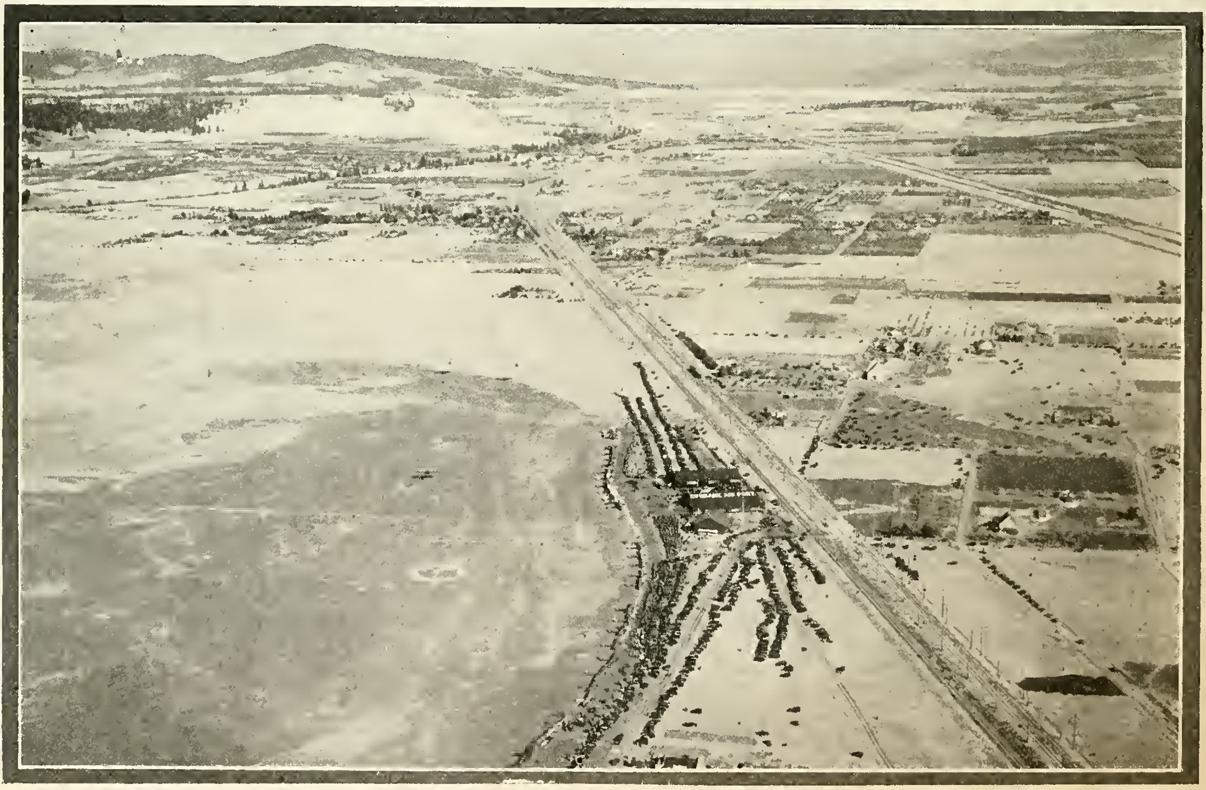
Novelty race for commercial planes (civilian). Prize money $1,500 divided $750, first; $500, second; $150, third and $100, fourth. Entries limited to four teams of three planes each. Motors not to exceed 150 cubic inch displacement.

The prizes awarded in the National Air Derby from New York to Spokane are $28,250, as follows:

Class "A"—for civilians only. Open or enclosed standard stock models primarily designed for commercial passenger service. Engine displacement—greater than 510 cubic inches up to and including, but not exceeding 800 cubic inches. First prize, $10,000; second prize, $5,000; third prize, $2,000; fourth prize, $1,000; fifth prize, $500.

Class "B"—for civilians only. Open or enclosed standard stock models primarily designed for commercial passenger service. Engine horsepower—up to and including, but not exceeding engines of 100 horsepower. First prize, $5,000; second prize, $3,000;

(*Continued on page* 212)



Airview of the Spokane, Washington, Airport which is now being prepared for 1927 National Air Races.

Sanctioned by the National Aeronautic Association

SEVENTH ANNUAL

NATIONAL AIR RACES

(SEPTEMBER 23 and 24)

and

National Air Derby Race, New York to Spokane

(SEPTEMBER 19 to 21)

Pacific Coast Air Derby Race, San Francisco to Spokane

(SEPTEMBER 21)

$50,000 IN CASH PRIZES

and valuable trophies, will be awarded winners in these premier aviation classics at the Spokane, Washington Municipal Air Port.

Enter and see the biggest aviation show ever held in the west. Contests for all types of military and commercial airplanes. Your audience will include the most noted flyers, Government officials, airplane manufacturers and representatives of foreign nations.

Complete details for the events can be obtained from Major John T. Fancher, managing director National Air Derby Association of Spokane. W. 818 Sprague Ave., Spokane, Wash.

Major John T. Fancher.

NATIONAL AIR RACES

(*Continued from page* 210)

third prize, $1,000; fourth prize, $500; fifth prize, $250.

In addition to these prizes the awarding of lap money to the pilots first reaching the various control and stop stations along the route of flight is being considered at this time by officials of the National Air Derby association of Spokane.

The Pacific Coast Air Derby, from San Francisco to Spokane, with prizes amounting to $5,000 will be awarded as follows:

Class "A"—for civilians only. Open or enclosed standard stock models primarily designed for commercial passenger service. Engine displacement—greater than 510 cubic inches up to and including, but not exceeding 800 cubic inches. First prize, $1,500; second prize, $1,000; third prize, $500.

Class "B"—for civilians only. Open or enclosed standard stock models primarily designed for commercial passenger service. Engine horsepower—up to and including, but not exceeding engines of 100 horsepower. First prize, $1,000; second prize, $500; third prize, $250; fourth prize, $150; fifth prize, $100.

Pilot N. P. Mamer of the Spokane airport left Spokane June 29th on a flight to California, to represent the National Air Derby association of Spokane Air Derbies.

Major John T. Fancher, commander of the 41st division air corps, Washington National Guard, and managing director of the National Air Derby association of Spokane, left July 13th for a test flight of the route of the National Air Derby from New York to Spokane.

The New York to Spokane Air Derby will start at Roosevelt Field, Long Island, September 20th at 5:00 a. m., Eastern Standard time. The first stop of 5 minutes will be Cleveland, thence to Chicago for a 5-minute stop, and to St. Paul for the first overnight stop. Aberdeen, S. Dak., is the first leg of the second day's flight, 5 minute stop; then to Miles City, and Butte, Mont., 5 minute stops at each; and to Spokane. In addition to the above control stations there will be intermediate fields at the following cities between Chicago and Spokane: LaCrosse, Wis.; Lemmon, S. Dak.; Billings and Missoula, Mont. Bellefonte, Penn., and Bryan, Ohio, will be the intermediate fields east of Chicago.

The route of the San Francisco-Spokane Derby is: Start at Mills Municipal Field, San Francisco, September 21st at 6:00 a.m., Pacific Standard time; to Swan Island Portland, Ore., for 5 minute stop; to Spokane Airport, Spokane. In addition to the above control stations, there will be intermediate fields at Red Bluff, Calif., Medford, Ore., Eugene, Ore., and Pasco, Wash.

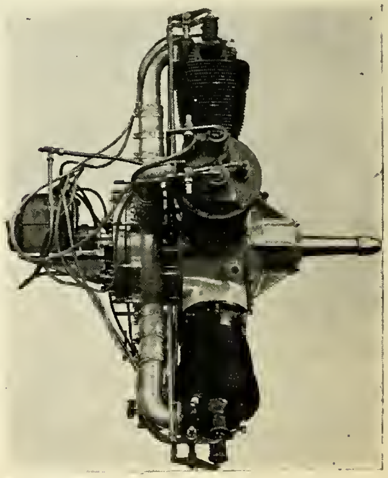
NEW KINNER ENGINE

Six of the new Kinner air-cooled 100 horsepower aircraft engines have recently been deliveerd to some of the leading commercial aircraft manufacturers on the Pacific Coast. Beside using the engine in the successful Kinner airplanes the Kinner Company is busy providing power plants of this type for several other plane builders.

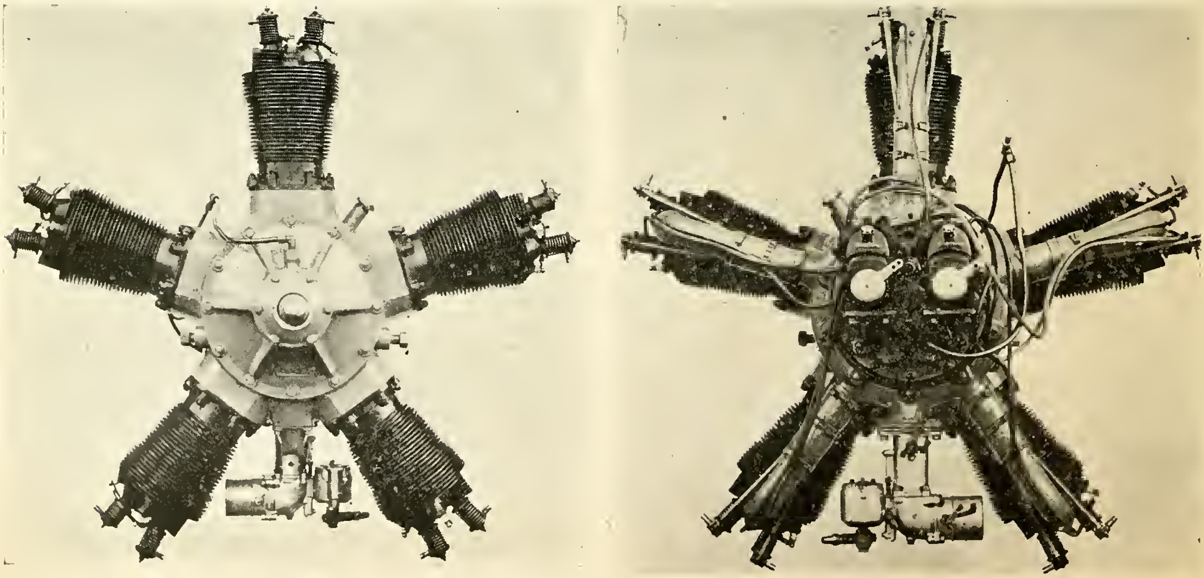
The first of an order for six Kinner planes for the Dennison Aircraft Corporation of Atlantic, Massachusetts, has been flown east by W. B. Kinner. The others are to be shipped soon.

A description of the Kinner K-2 engine appeared in the February issue of Aero Digest. The following are its specifications:

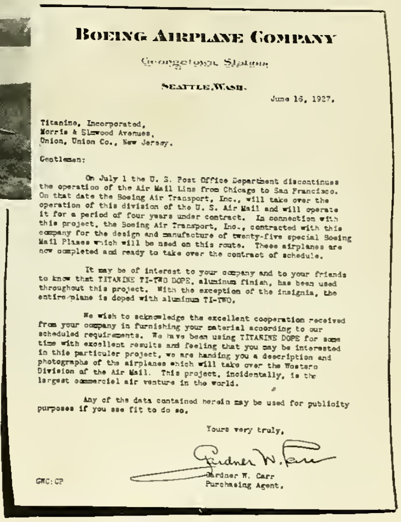
Displacement	372 cubic inches
Brake h.p.	100
Normal engine speed	1,800 r.p.m.
Piston speed	1,575 feet per minute
Maximum gas consumption per hr.	7 gallons
Maximum oil consumption per hr.	2¼ pints
Weight complete including hub	231 pounds



Side view of the Kinner engine.



Front and rear views of the new Kinner 100 horsepower aircraft engine.



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It may be of interest to your company and to your friends to know that TITANINE TI-TWO DOPE, aluminum finish, has been used throughout this project. With the exception of the insignia, the entire plane is doped with aluminum TI-TWO.

We wish to acknowledge the excellent cooperation received from your company in furnishing your material according to our scheduled requirements. We have been using TITANINE DOPE for some time with excellent results and feeling that you may be interested in this particular project, we are handing you a description and photographs of the airplanes which will take over the Western Division of the Air Mail. This project, incidentally, is the largest commercial air venture in the world.

Any of the data contained herein may be used for publicity purposes if you see fit to do so.

Yours very truly,

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Purchasing Agent.

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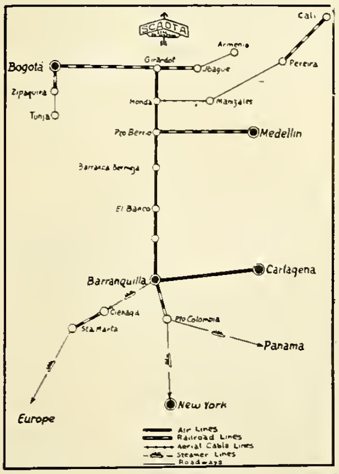

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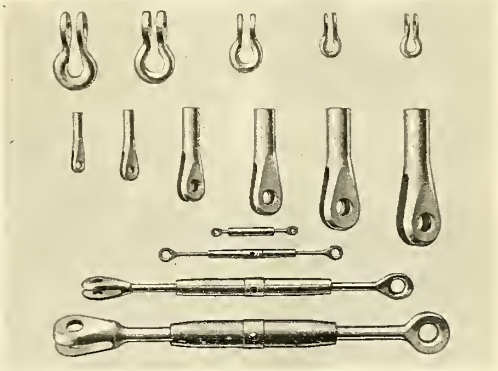

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COLONEL LINDBERGH'S U. S. AIR TOUR

COLONEL LINDBERGH left New York City at noon July 20th in the *Spirit of St. Louis* for a three months' tour of the 48 states under the auspices of the Daniel Guggenheim Fund for the Promotion of Aeronautics.

He arrived at Brainard Field, Hartford, the first stop on the tour, at 2:30 p.m. The Connecticut capital gave him a regular "Lindbergh" ovation; Governor Trumbull and Acting Mayor Houghton Bulkley welcomed him and, in the evening, the Colonel addressed a dinner of the Hartford Chamber of Commerce, stressing the need of landing fields in every community.

In announcing the itinerary of Colonel Lindbergh's tour, Harry F. Guggenheim, president of the Fund, said:

"The Guggenheim Fund considers itself very fortunate in being able to arrange for Colonel Charles Lindbergh to visit each of the states in the interest of aviation.

"Colonel Lindbergh's tour is undertaken primarily to stimulate interest in the use of air transportation. He will also encourage the use of present aerial transportation facilities for mail, freight and express and passengers and other services now performed by aircraft.

"Colonel Lindbergh will be accompanied by a Department of Commerce airplane which will carry Donald E. Keyhoe, of the Department of Commerce, who will act as Colonel Lindbergh's personal aide, and Philip R. Love, pilot. Mr. Love is a personal friend of Colonel Lindbergh having served with him at the Army Training School at Brooks Field. In addition, the plane will be accompanied by an expert mechanic.

Cities to be visited are as follows:

Between July 20th to July 31st—Hartford, Providence, Boston, Portland, Me., Concord, N. H., Springfield, Vt., Albany, Buffalo and Syracuse.

Between August 1st to August 15th—Cleveland, Pittsburgh, Wheeling, Dayton, Cincinnati, Louisville, Indianapolis, Detroit, Grand Rapids, Chicago and St. Louis.

Between August 16th to 31st—Kansas City, Wichita, the Tri-Cities—Moline, Davenport and Rock Island, Milwaukee, Madison, Twin Cities—St. Paul and Minneapolis, Little Falls, Fargo, Sioux City, Des Moines, Omaha and Denver.

Underwood.

Harry Guggenheim and Col. Lindbergh.

Between September 1st to 15th—Cheyenne, Salt Lake City, Boise, Butte, Spokane, Seattle and Portland.

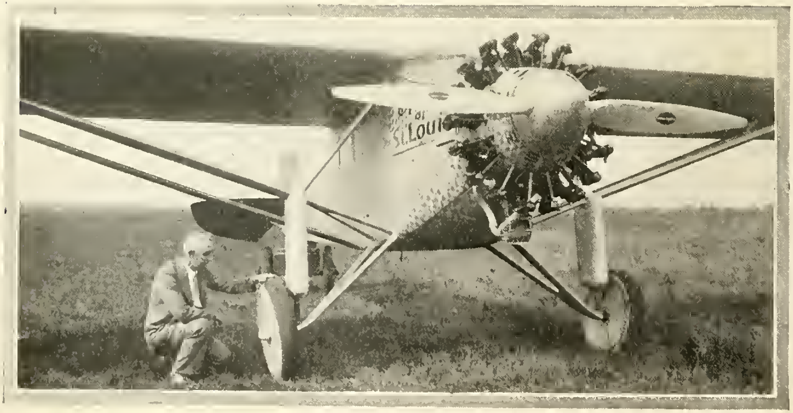
Between September 16th to 30th — San Francisco-Oakland, Sacramento, Reno, Los Angeles, San Diego, Tucson, El Paso, Fort Worth, Dallas, Oklahoma City and Tulsa.

Between October 1st to 15th — Little Rock, Memphis, Nashville, Birmingham, Jackson, New Orleans, Jacksonville, Atlanta, Spartanburg, Winston-Salem and Richmond.

Between October 16th to October 20th—Baltimore, Atlantic City, Washington, Wilmington, Philadelphia and New York City.

Short stops will be made at Schenectady, Erie, Springfield, Ill., St. Joseph Mo., Sioux Falls, S. D., Lordsburg, N. M., and Abilene, Texas."

During the tour any one who sends ten cents, to cover the cost of mailing the picture by air mail, to Colonel Lindbergh in care of the St. Louis Chamber of Commerce, St. Louis, Mo., will receive a photograph of the transatlantic flyer and "We."



H. Wacker of the Goodrich Co. inspecting the tires on Col. Lindbergh's plane.

LINDBERGH IN BOSTON

By G. W. HAMBLIN, JR.

"SLIM" came; "Slim" saw; "Slim" conquered Boston, hands down. The town is the personal property of the "Glorious Kid". He came in out of a gray sky Friday afternoon, July 22nd, jazzed the other part of "We" over Boston, put his ship through its paces over the airport, and then gracefully set the ship down.

After Mayor Nichols, Governor Fuller, and Captain Heisen, commander of the field, and various other officials greeted him the parade got under way. The sidewalks were jammed with rich man and poor man, rubbing elbows, pushing and mauling each other, fighting for a glimpse of their hero.

There was a terrific jam on the Boston Commons, where the official reception was held. Close to three hundred thousand people were jammed into a sea of wild-eyed humanity. When, after many long speeches, Colonel Lindbergh was introduced to the people, pandemonium broke loose. Hats, canes, umbrellas, anything and everything that was in the hands of that vast mob, were hurled into the air. Staid, sedate old Beacon Hill never saw such a demonstration. Dignified Boston had forgot its dignity in welcoming Lindbergh!

In the evening, the scene shifted to the Boston Arena and a giant reception.

Saturday morning, July 23rd, brought Comdr. Byrd, Lieut. Noville, Bert Acosta, Bernt Balchen and Clarence Chamberlin together with Lindbergh, to a breakfast at the Hotel Bellevue, which was given by Mayor Nichols. From there the entire party moved to the City Hall reviewing stand where the 26th Division passed in parade. Immediately following that, Lindbergh went to the airport, where his beloved *Spirit of St. Louis* was housed.

When asked for an official statement for AERO DIGEST, he simply said: "Anything you can do to help this thing along will be appreciated by us." I asked him who he meant by "Us". "Not only the very kind Daniel Guggenheim, and the Department of Commerce, but my plane and me." A hearty handclasp, and another of those flashing smiles, and Col. Charles A. Lindbergh, "Slim" to all the world, was off into that terrible fog. A few circles of the field, and the "ambassador without portfolio" was on his way. The Glorious Kid!

ORIGINAL TIRES ON LINDBERGH'S PLANE

MR. H. WACKER, chief of the Aeronautical Division of the B. F. Goodrich Rubber Company, inspected the Goodrich Silvertown tires on Colonel Charles A. Lindbergh's ship, the "Spirit of St. Louis," just prior to taking off on his tour of the country which will take the famous "We" to over 75 cities.

After a careful inspection, these Goodrich tires were pronounced perfect. They are the same tires that took off and landed "We" on its history-making flight across the continent, then over seas to France.

THE INTERNATIONAL AIRPLANE REGISTER

THE international convention of shipping classification societies, which recently met in Paris, was able to conclude rapid work due to the fact that the United States, France, Great Britain, Germany, Norway, Sweden, Japan and Italy agreed to register aircraft just as ships are registered. The Aeronautical International Register (A. I. R.) is now being prepared. Captain Charles A. McAllister, chairman of the American Bureau of Shipping, was America's delegate.

SCADTA AIR MAIL

ACCORDING to an arrangement with the U. S. Post Office Department the Sociedad Colombo Alemanas de Transportes Aereos (SCADTA) of Barranquilla, Colombia, S. A. are now able to offer to U. S. customers a simple and efficient way of handling Colombian Air Mail letters.

The double envelope system used up to this date has been necessary to insure the delivery of letters intended for air mail to the SCADTA in Barranquilla. The U. S. Post Office Department has now agreed to sort and bundle letters which are clearly designated as air mail letters in a separate package guaranteeing the delivery of such package to the SCADTA office.

The air mail saves a minimum of 10 days in the delivery of letters sent from the United States to the interior of Colombia. Service has been operating continuously in connection with the American mail steamers for four years.

The SCADTA also offer parcel post air mail service. They pay the duties in Barranquilla, forward the parcel without delay and collect the amount due from the addressee.

The American Trading Company, New York, N. Y., are the U. S. agents for SCADTA. Branch offices are maintained at San Francisco, New Orleans, Chicago, Boston, Havana. Panama and Colon.

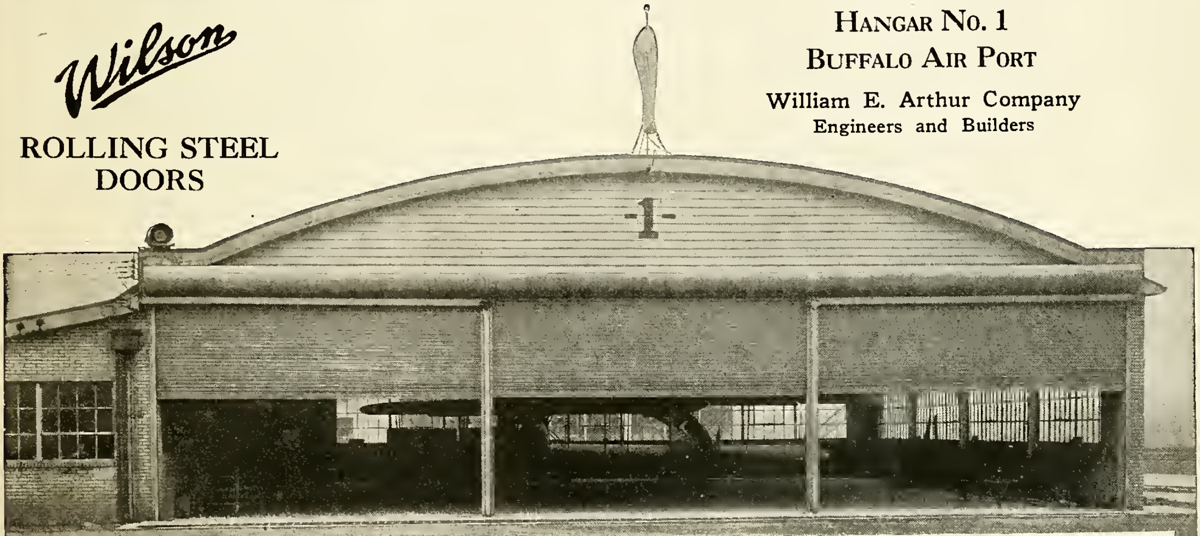
Donald Ross.

ROSS VICE-PRES. OF SPLITDORF-BETHLEHEM

DONALD ROSS, one of the assistants of the late Henry P. Davison of J. P. Morgan & Company in the conduct of the American Red Cross during the war, has become vice-president in charge of finance of the Splitdorf-Bethlehem Electrical Company. As assistant secretary of the war-time Red Cross, Mr. Ross gained nation-wide prominence in connection with his handling of the allocation of more than $300,000,000 appropriated by the War Council for Red Cross activities.

After the war, when Walter Rautenstrauch, who was recently made president of the Splitdorf-Bethlehem group, undertook the rehabilitation of the Liberty Yeast Company, a subsidiary of the former U. S. Products Company, Mr. Ross was asked to become treasurer of the concern. It was losing $30,000 monthly when they took hold of it, and four years later, when it was acquired by the Fleishmann Yeast Company, its earnings were on the basis of $350,000 yearly.

Mr. Rautenstrach then entered the Fred T. French Company as president, and Mr. Ross became secretary of the Federal Water Service Corporation, whose assets run to $125,000,000. The renewed association of the two men in the Splitdorf-Bethlehem executive is regarded in financial circles as another significant step in the policy of energetic expansion in the radio, electric and automotitve fields.



Wilson

ROLLING STEEL DOORS

HANGAR NO. 1
BUFFALO AIR PORT
William E. Arthur Company
Engineers and Builders

Modern Equipment is a Vital Necessity for Hangars

Wilson rolling steel doors multiply-operated by electric motors, economical and foolproof, should be standard on all hangars designed to give maximum service.

Pressing a button raises or lowers all curtains simultaneously.

Coiling overhead, out of the way, giving unobstructed opening—save time and temper. Ships can always get away on schedule.

Send for details and data before proceeding with your design

THE J. G. WILSON CORPORATION, 11 East 38th Street, New York City
Offices in all principal cities
Factories, Norfolk, Virginia

NEW AIR MAIL BIDS

THE following fifteen bids were received for carrying the mail over five new routes proposed by the Post Office Department:

Bidder	*Type*	*No. Planes*	*Speed*	*Amt. Bid*
Albany to Cleveland, via Schenectady, Syracuse, Rochester and Buffalo				
Continental Air Lines, Cleveland, O. Ray P. Cunningham, Pres.	Waco-10	5	90–100	$1.22
Buffalo Air Lines, Inc. Buffalo, N. Y. John M. Satterfield	Fairchild, Stinson, or Waco	8	130	1.37
Colonial Western Airways, Inc., New York John F. O'Ryan, Pres.	Cabin Monoplane	5	100–140	1.11
Embry-Riddle Co., Cincinnati, O. J. P. Riddle, Sec.-Tr.	Whirlwind Waco-10	6	130	2.47
Cleveland to Louisville, via Akron, Columbus and Dayton				
Embry-Riddle Co., Cincinnati, O. J. P. Riddle, Sec.-Tr.	Whirlwind Waco-10	5	130	1.93
F. Tryon Mengel, Louisville, Ky.	Hess	5	125	2.23
Continental Air Lines, Cleveland, O. R. P. Cunningham, Pres.	Waco-10	5	100	1.22
Southern Air Lines, Inc., New York C. B. Whitney, Pres.	Fairchild Travel Air Waco	8	130	1.96
Dallas to Galveston via Houston				
Seth W. Barwise, Fort Worth, Tex.	Travel Air	3	110–135	2.89
William Dunning, jr. Fort Worth, Tex.	Fokker Universal	4	92	3.00
Dallas to San Antonio via Waco and Austin				
San Antonio Aviation and Motor School, San Antonio, Tex. R. F. Long, Pres.	Swallow Travel Air	5	90–120	2.90
William Dunning, jr. Fort Worth, Tex.	Fokker Universal	6	90	3.00
Seth W. Barwise, Fort Worth, Tex.	Travel Air	3	135	2.89
Key West to Havana, Cuba				
Pan American Airways, Inc., New York City J. K. Montgomery, Vice-Pres.	3-Eng. Fokker or Ford	3	115	.405
Cuban-American Air Lines, Inc., Miami, Fla.	Curtiss Flying Boat	2	100	.46

NEW BALLOON RECORD

S. A. V. RASMUSSEN was awarded the Detroit News Trophy for winning the Detroit *News* balloon race on July 4th. Rasmussen landed near Kingston, N. C., about 580 miles from Detroit, establishing a new world's distance record for balloons of the 3rd category (901—1,200 cubic meters). The previous record was made in 1922 by Georges Cormier (France)—499.69 miles.

Underwood.

Thea Rasche, German aviatrix, and the Udet plane with 125 h.p. Siemens-Halske engine with which she is giving exhibitions in the United States.

AIR MAIL BIDS ASKED

PROPOSALS have been invited for the transportation of air mail under contract on the following routes:

Atlanta, Ga. via Birmingham and Mobile, Ala. to New Orleans, La., and return. Distance each way approximately 478 miles.

St. Louis, Mo. to Memphis, Tenn. Distance each way approximately 245 miles.

Chicago, Illinois, via Indianapolis, Indiana, to Cincinnati, Ohio and return. Distance each way approximately 270 miles.

Bids will be received at the Post Office Department in Washington until 12 o'clock noon, August 18, 1927.

The Fokker Napier-engined flying boat built for M. Harold Vanderbilt.

DALLAS AIR NEWS

By MONT HURST

THE month of July will long be remembered as a month in which aviation history was made in Dallas. To begin with, the city purchased Love Field from a private corporation, paying the sum of $432,500 for the field. It comprises 173 acres, eleven hangars, and other buildings. Improvements are to be made at a cost of $50,000. The field was an Army field during the War and many pilots were trained there. The day after the purchase, the flyers of the Ford Reliability Tour landed in Dallas and a dinner was extended them by representative citizens of Dallas along with the members of the Dallas Flying Club. It is planned to dedicate the new municipal field on August 12th with an air meet. Many prizes are offered for different events and a prize is offered for out-of-town flyers who come the longest distance.

The day of the dedication will be the date of Captain William Erwin's hop-off for Hongkong in the competition for the Easterwood prize of 25,000 which is offered for the flight. Captain Erwin's companion on the flight will be his wife, who is an experienced pilot. Captain Erwin was an Ace during the War and was recently decorated again by the Government for distinguished service. His plane is being built in Wichita, Kansas at the Swallow factory and will be flown to Dallas.

Jean Francis de Villard of Hollywood, who is entered in the Dallas-Hongkong contest, expects to fly to Dallas on August 9th. He will be accompanied by Rex Smith. W. H. Fine of Dayton, Ohio has also entered as has Eugene Conrad of San Benito, Texas, Herbert Kindred, a Dallas-Chicago air mail pilot, and many other flyers. De Villard and Fine expect to hop off for Hongkong on August 11th. Fine will do a solo flight. S. B. Ford, radio expert and navigator will make the flight with Conrad. Conrad will use a Bellanca.

Love Field will be the scene of the hop-off. $100,000 worth of improvements will eventually be made at the new municipal field. An administration building will be built and a dormitory for visiting flyers also will be constructed. A new corporation is being organized to manufacture airplanes at the new field. Several experimental types are being made now. The new field means much to the Southwest.

MAIL BID AWARDED

THE Pan-American Airways, Inc., were awarded the contract for carrying mail by air between Key West, Florida, and Havana, Cuba.

This route is classified as foreign service. Air mail postage is not necessary. Ordinary first-class mail will be handled by air instead of by steamer as at present. Mail steamers leave Key West at 8:30 a.m., and arrive at Havana at 3 p.m., and operate on a similar schedule northbound. The plane probably will leave Key West at 8 a.m. and arrive in Havana an hour later, the distance being only approximately 90 miles.

NORQUIST PRESIDENT OF BUTLER MFG. CO.

E. E. NORQUIST has been elected president and general manager of the Butler Manufacturing Company, Kansas City, Mo., and Minneapolis, Minn., succeeding Charles R. Butler, who has been elected chairman of the board of directors. Mr. Butler plans to leave soon for California and is expected to make it his home.

Mr. Norquist has been closely connected with the company ever since its beginning in 1901. He was one of the original incorporators and was a mechanic in the little 25 x 100 ft. shop. that first housed the company. He first served as plant manager and later became vice-president.

Mr. Norquist's broad outlook is based on seeing the company grow from a small shop with a small capital to one that covers 15 acres and a capitalization of over one million dollars, and from shipments that covered not only local and neighboring territory but world-wide exportations.

E. E. Norquist.

BROOKLYN AERO CLUB

THE Brooklyn Aero Club, which meets at 1731 Pitkin Ave., Brooklyn, N. Y. every Friday evening at 8:30 P. M., is desirous of obtaining air-minded people residing in Brooklyn over 18 years of age as members. The club, under the auspices of the American Society for Promotion of Aviation, is organized to foster and promote aviation, make Brooklyn the leading air center in America, teach its members aviation, both ground and flying instruction, through having recognized and experienced instructors in charge of this phase. Negotiations are now under way to obtain a plane.

Anyone desirous of obtaining further information may obtain same by writing Irving Heartstone, 1712 West 7th St., Brooklyn.

HASKELITE CO. USES AIR MAIL EXTENSIVELY

COINCIDENTAL with the taking over of the air mail routes by commercial companies on July 1, the Haskelite Manufacturing Corporation of Chicago have issued instructions to send all western and Pacific Coast mail, urgent or otherwise, by air mail.

The Boeing Air Transport, Inc., operates the Chicago-to-San Francisco route, having contracted with the Post Office Department for this service for four years. Haskelite plywood, manufactured by the Haskelite Manufacturing Corporation, was used extensively throughout the wings and tail surfaces on the twenty-five new Boeing planes used on this route.

This company is one of the largest suppliers of material in the aircraft field, having manufactured Haskelite waterproof panels for aircraft builders since 1917. They have supplied panels as thin as 1/16 inch and 3/32 inch, and, in fact, have made panels of 1/30 inch thickness.

BENNETT BALLOON RACES AT DETROIT

SIXTEEN balloons have been entered for the James Gordon Bennett international balloon race which will start on September 10 from Detroit, instead of from Denver as formerly planned.

Did You Notice It?

WHEN Ernest Smith made his first attempt to hop from Oakland to Hawaii in his Travel Air Monoplane and came back with the broken wind deflector, did you notice that he landed that tremendous load successfully without the slightest mishap? This was so remarkable that the New York *Times* called particular attention to the fact in their story.

We call it good flying.

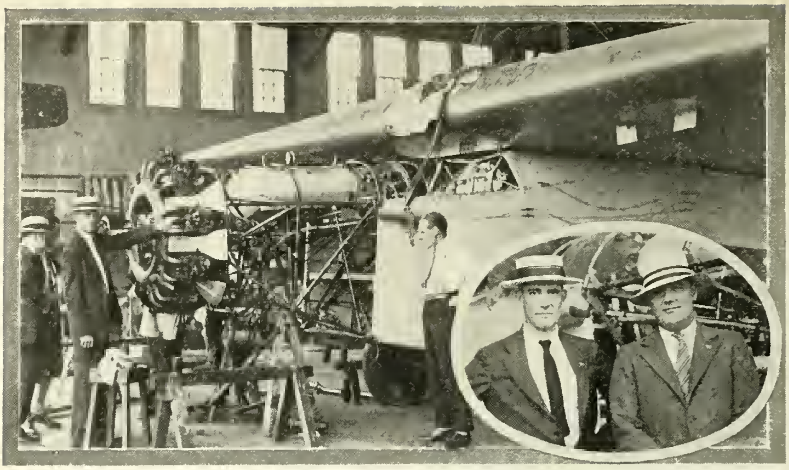
Congratulations, Smith, on your ability and your choice of a ship.

Among other things, the New York Times said: —

"The smaller and lighter plane got into the air much quicker . . . . at exactly 9.36 o'clock . . . 10 minutes later . . . Smith with unusual skill landed despite the handicap of his heavy load of gasoline which strained its landing gear to the limit."

It is interesting and important that the same landing gear was used by Smith in his second take-off with a great load of gasoline.

Travel Air Mfg. Co., Inc.
Factory and General Offices
WICHITA, KANS.



Acme.

J. D. Hill and Floyd Bertaud and the Fokker plane they will fly to Rome, Italy.

NEW YORK-ROME HOP

LLOYD BERTAUD and J. D. Hill, both well known U. S. Air Mail pilots, expect to take off on a non-stop 4500-mile flight from Roosevelt Field, New York to Rome, Italy. Their plan is to start between August 10 and 15. The flight is financed by William Randolph Hearst, whose plane, "Old Glory", a single-engined Fokker monoplane equipped with a 480 h.p. Bristol Jupiter engine, is nearing completion at the plant of the Atlantic Aircraft Co. in Hasbrouck Heights, N. J.

Four brass gasoline tanks, of 95 gallons each, have been installed in the wing, which has a span of 64 feet. A brass gasoline tank of 820 gallons capacity has been installed in the fuselage between the cockpit and the rear compartment where the radio will be placed.

BOSTON AIRPORT NEWS

By G. W. Hamblin, Jr.

THE Boston Airport Corp. has added another record breaking month to its long list, and attributes its success to the ocean hops of Lindbergh, Chamberlin, Byrd, Maitland and Smith. Business was fair, or as good as could be expected, until Lindbergh galloped to Paris, and since then it has been amazing the way the land-lubbers, who, after all, will make or break commercial flying in America, have visited the port and flown in the many ships here. Eleven new students have been added to the school conducted by the Airport Corp.

The Harvard Flying Club has turned in its OX5 Travel Air, and has ordered an OXX6 Travel Air, for delivery in September. The club has grown in leaps and bounds since their ship was purchased last fall and, with the opening of classes in September and the delivery of the new ship, confidently expect to have twice as much fun as they have had in the past.

B. F. Billings, manager of operations of the Airport Corp., among the many taxi hops that he made during the past month, took William E. Arthur, the "Big Hangar and Field Man from New York", on an extended tour, embracing the cities of Portland, Schenectady, Geneva and New York.

A Stinson-Detroiter biplane was purchased from the Airport Corp. by Harry Jones, of Old Orchard, Maine. This makes three of these ships in New England, the Airport Corp. having the other two.

Messrs. Jones, Brooks and Lockwood, federal inspectors visited the port during the month, and pronounced everything O.K. They are to be commended for the fine attitude they took toward the boys here, and their helpful suggestions were well received.

The National Air Tour was a sign for the air-minded citizens of Boston to flock to the field, and the sight of the planes coming in through all the fog and rain that prevailed here and along the route was worth seeing.

Fred Perierra has his American Eagle on the field, and with Al Backstrom flying for him at his field at Lynnway, reports business as being good. Perierra has tied up with the Statler Hotels, providing transportation to guests of the hotel here in Boston to any other Statler. He has also signed with the Gray Line Tours, and conducts sight-seeing trips around historic Massachusetts.

Fitting out the transatlantic flyers.

Lts. Balchen (left) and Noville (right) obtaining helmets and gloves from A. Pedu, Air Transport Equipment Co.

Johnny Nelson sold his Waco to the Aero Inn Associates of North Reading, Mass., and "Red" Chandler and Lieut. E. S. Beck have been engaged as pilots. Fred Bradstreet and Henry Schultz are the "masterminds" behind the business. The Waco is used both at the field behind the Inn, which is situated on the Boston-Lawrence highway and at the Boston Airport. Chandler is the first commissioned commercial pilot graduated by the Airport Corp. flying school. The Associates plan to have advertising, cross-country, photo, flying school and joy hops. A Waco-10 is expected in the near future.

William Weightman has purchased an OX5 Travel Air from the Corp., and will have his ship very soon.

The efforts of the writer to stir up interest in making this port the finest in the East have finally brought forth fruit. Four years ago I made the rounds of the various newspapers in Boston, trying to get some one of them to get behind the field and push. After getting the slack of my trousers dusted out of them all, I called a halt for a year, and then tried again. Same result. Now, the *Boston American* has been running a series of articles for the past three weeks, advocating removing the hangars to the southwest corner of the field and filling in the whole area with cinders. This somewhat sunburned reporter likes to think that his feeble efforts had something to do with the present interest in the field.

MAITLAND and Hegenberger, Hawaiian flyers, reached Boston Airport Friday, July 23, five hours after Lindbergh landed at the port, escorted by three Curtiss Pursuit planes, flown by Lieuts. Frank C. Crowley, Boston's "Ace", J. J. Williams and Lawrence A. Lawson. The trans-pacific flyers set the ship (a Fokker tri-motor) down beautifully, and taxied up to the line amid the din of automobile sirens, horns and the cheers of two thousand spectators.

Saturday was devoted to the Mayor's breakfast at the Bellevue and to the review of the 26th Division, M. N. G., the entire group of flyers, eight in number, being the guests of Mayor Edwin C. Nichols.

Afterwards, Commander Byrd went to his home in Boston; his companions, Noville, Acosta and Balchen, returned to New York; Lindbergh left for Portland and Chamberlin spent the rest of the day laying plans for a takeoff from a specially constructed runway on the *Leviathan,* which was in the South Boston dry dock at the time.

South Boston claimed its own Sunday, July 24th, when it conducted a parade and reception at Marine Park for "Al" Hegenberger, a native of Boston, and "Les" Maitland. The sidewalks were lined with cheering townsfolk of Lieut. Hegenberger and at Marine Park speeches galore were given by prominent South Bostonians, among them Congressman Gallivan who was instrumental in bringing the flyers to Boston, and who was in charge of the celebration.

LIEUT. C. A. TINKER

LIEUTENANT CLIFFORD ALBION TINKER, Naval Reserve Officer, well-known aeronautical writer and former editor of AERO DIGEST, died in Garfield Hospital, Washington, D. C., on July 20th after a long illness.

Lieutenant Tinker was born at West Fremont, Me., June 4, 1877. He served during the Spanish-American War as a member of Battery D, 1st Regiment of Coast Artillery, at Boston. From 1908 to 1916 he commanded Company H of the Massachusetts Naval Militia at Springfield. He was Commanding Lieutenant in the Naval Reserves in November, 1917, and served on Admiral Sims staff in London during the World War and with the Aviation Corps in France and England. He was discharged in 1921.

During the transatlantic flight of the NC boats Lieutenant Tinker was the official reporter for the Navy Department at Rockaway, N. Y., and Trepassy, N. S. In 1921 he went to England to supervise press arrangements in connection with the flight of the dirigible R-38, which was being built there for the United States Navy and which later burst and was totally destroyed during a test flight over England.

He was a member of the Royal Societies Club of England, an honorary member of the Royal British Flying Corps and of the National Aeronautic Association. He was buried in Arlington cemetery.

SHOCKLEY FIELD NOTES

By HAROLD M. BARNES

CLYDE E. SHOCKLEY represented the field at the dedication of Brazil's new airport at Brazil, Ind., on July 17th. Planes from McCook, Chanute and Stout fields were present to assist in the day's program.

On July 23rd and 24th Jerry Marshall of Austin, Texas, staged an air carnival at Peru, Indiana. On the 22nd Jerry led a "good-will" formation of five ships to the principal cities in northern Indiana for the purpose of advertising the carnival. Those who participated in the tour and carnival were: Jerry Marshall in a Waco-9, E. E. Basham of Muncie in a Swallow, Clyde Shockley of Shockley Field in a Swallow, O. O. McVay of Fort Wayne in a Waco-9 and Reader of Austin, Texas, in an LS-5. Sunday's program featured a race between all five ships and dead-stick landings.

SPEED OF MAITLAND-HEGENBERGER PLANE

THE average speed of the Army plane flown by Lieutenants Maitland and Hegenberger from California to Honolulu June 28-29, was 94⅞ miles per hour, instead of 115 m.p.h. as published last month from a telegraphic report of the flight from our Western representative received just as we were going to press. Leaving Oakland municipal airport at 7:08 a.m., Pacific time, June 28, they arrived at Honolulu at 8:30 a.m., Pacific time, June 29.

ASTORIA AERO CLUB

THE Astoria Aero Club has been formed, under the auspices of the American Society for Promotion of Aviation, and has a membership roll of fifty. The fees are $5 initiation and yearly dues, $12. Officers are as follows: Pres., L. Lowy; 1st vice-pres., L. Leonard; 2nd vice-pres., M. Canavan; treas., W. Seigmann; fin. secy., N. Nerich; secy., P. Kip; asst. secy., M. Keller; sgt. at arms, J. Roth.

NEW APPOINTMENTS IN COMMERCE DEPT.

MAJOR CLARENCE M. YOUNG, who has been serving as chief of the Air Regulations Division, has been appointed Director of Aeronautics for the Department of Aeronautics. This appointment makes him the first assistant to Assistant Secretary of Commerce for Aeronautics, William P. MacCracken, Jr. Major Young's duties will be to supervise all details relating to civil aviators, civil aircraft manufacturers and others interested in the commercial field.

James D. Summers was appointed Aeronautics Trade Commissioner in Central and South America, with headquarters at the Department of Commerce Office in Panama. His assignment is to stimulate the sale abroad of American airplanes and accessories, as well as to foster the development of inter-American aviation.

FIFTY AMERICAN EAGLES
on one contract to our New York distributors,
The American Eagle Aircraft Distributors of New York, Inc.,
Curtiss Flying Field, Garden City, New York.
We consider this highly complimentary to our product.
Several States are open for distributors.
AMERICAN EAGLE AIRCRAFT CO., 2330 Harrison St., Kansas City, Mo.

P. & A. Photo.

C. Francis Jenkins and his new device for sending daily maps by radio.

RADIO WEATHER MAPS

EARLY in August 1926, C. Francis Jenkins added another application to his visual radio mechanisms, having already transmitted by radio photographs, writing, radio movies and radio vision. This new application is the transmission by radio of weather maps, received on board ships at sea, airships, and at various land stations.

Early each morning the Weather Bureau in Washington receives by radiogram, telegraph and telephone, reports on weather conditions over a wide area of the western hemisphere. From these reports a weather map is made up, drawn in black ink on a special base. A photographic film negative is then made of it by direct contact printing. This negative is placed on the glass cylinder of the transmitting machine in the Navy building and attached by wire to Arlington Radio Station.

This glass cylinder of the transmitting machine is revolved at a constant speed by an electric motor. Within the cylinder is a small electric light. Outside of the cylinder is a light sensitive photo-electric cell arranged to move along in front of the length of the cylinder at the rate of one fiftieth of an inch for one complete revolution of the cylinder. This cell has a small aperture, and the light from within the glass cylinder passes through the weather map thereon, affecting the sensitivity and electrical conductivity of the cell. The electric light within the cylinder advances with the cell so as to be always opposite the aperture.

As the black and white portions of the negative—the whites being transparent and the blacks opaque—rotate before the aperture of the cell, the light passing through from within is intermittently cut on and off, and the conductivity of the cell is varied accordingly. But as the cell is advancing along the cylinder from one end to the other at the rate of one-fiftieth of an inch to each revolution, and the diameter of the aperture is the same, any transparent place on the film never passes before the cell opening more than once, although eventually the whole map is covered. As the light is broken up into impulses by the white lines of the film, it causes corresponding variations in the electrical resistance of the cell. These resistance charges cause sharp fluctuations in the flow of feeble current through the cell.

In order that this very weak current may be strengthened so that it will operate the relays of the powerful radio set, it must be passed through amplifiers. A pulsating current through the cell is obtained by intermittently blocking off the light by means of a chopper wheel rotating in front of the electric light in the cylinder. This pulsating current can be transformed into alternating current so as to pass through the necessary number of amplifying units. The amplifier feeds a double rectifier which actuates the relay controlling the output of the station transmitter.

The signals sent out by the radio station are similar to code signals except that they are a meaningless jumble of dots and dashes.

The weather information is received in ink on a printed base map, the map lines being brown on a white paper, which is wrapped around a cylinder corresponding in size with the cylinder at the transmitting station. Both the transmitting machine and all receiving machines operate at the same speed, and, as the radio impulses come in, an ink pen traces lines on the base to correspond with the transparent whites of the negative. The map signals are reproduced in ink and when the last signal impulse is recorded the map is complete.

The cylinders are kept in synchronism by a special master signal which holds each receiving cylinder in exact synchronism with the transmitting cylinder.

These same weather map receiving machines may be fitted with a simple attachment which makes them also transmitting machines, and, when carried aboard an airplane, the observer may send back to headquarters maps or sketches with explanatory notes made with an ordinary lead pencil or from a graphite ink drawing, thereby doing away with the photographic negative at present used for transmitting maps to ships at sea.

This machine is now being introduced into aviation fields, Lakehurst, N. J., being the first to have the service. This weather map service has been in test use for some time on different navy ships, the *U. S. S. Kittery* having received excellent maps as far south as Guantanamo Bay, Cuba, which is considered about the worst static area. Maps have been received on board ship under various conditions, during hurricanes, thunder storms, and when the static conditions were so bad that is was impossible to receive weather information by code, but the radio map came through without destroying its value, the static making specks all over the map, but the isobars and other data were quite legible.

AERO. MECHANICS ASSN.

THE mechanics engaged on the various flying fields in and around New York City have recently formed an association known as the Aeronautical Mechanics Association of America with headquarters at Curtiss Flying Field, Garden City, L. I. All aircraft mechanics will be welcomed.

It is strictly an organization of good fellowship founded on the principles of friendship and justice, all members being interested in the advancement of aeronautics and the right of the mechanic to enjoy to the fullest extent representation and such privileges created by their connection with aircraft.

The present officers and members are all thorough mechanics and all new applicants are to be passed upon after investigation.

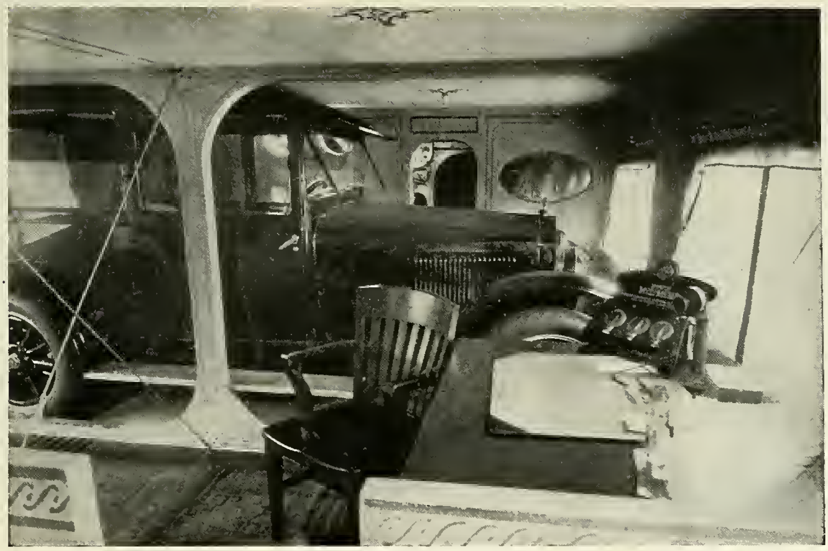
Upon request full information will be sent to those having the association's views at heart.

DANGER MARKERS

APPROVAL was given recently by the Army Air Corps, the Bureau of Aeronautics, and the Department of Commerce of a standard program for marking radio towers, transmission lines, and other menaces to air navigation in the United States.

The members composing the committee that formulated this program of improving the safety devices of flight which the above-named departments approved, are: Lieut. Donald G. Duke, Army Air Corps; Lieut. Logan C. Ramsay, of the Navy, and F. C. Hingsburg, of the Department of Commerce.

The newly adopted standard program for marking the air dangers prescribes that in order to insure maximum visibility from the air that all obstruction towers, such as radio masts, flag poles, transmission poles, and other similar objects in the vicinity of air ports, intermediate landing fields, or civil airways must be painted. They will be marked with flashing red lights at night and additional fixed lights are to be placed on radio towers. Civil airways are defined as lanes three miles wide between airports. At intervals of not more than 500 feet, transmission lines will be marked by day with streamers, cones or panels suspended from wires running parallel to the lines, and by night with fixed white lights.



Interior view of RB2 Transport plane as flown with Essex Coach, office equipment and eight men

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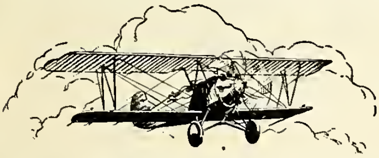

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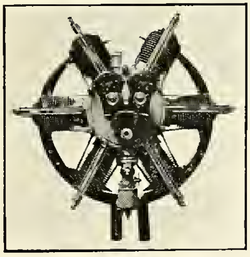

IF aircraft manufacturers, airline operators, pilots, and aircraft purchasers will study late records of aircraft achievement, they will find a history of radial aircooled motor accomplishment; and if they study with equal care the accident record, they will find the story of aircraft old and new underpowered by watercooled wartime motors.

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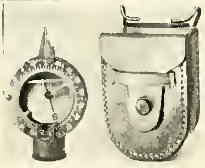

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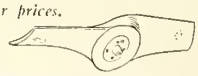

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BOY'S AERO CLUB

A GROUP of boys, from the ages of 14 to 16 years, have organized a ground club in aeronautics in Martinsburg, W. Va., under the leadership of George DeGrange. Eugene Jack is the secretary.

The purpose of the club is to give the boys an elementary knowledge of aeronautics, thus creating interest in the subject and laying the foundation for more intensive study.

The boys have asked the government for any obsolete equipment available and will greatly appreciate any donations in the line of equipment, books and any literature which will aid them in their quest of knowledge.

TITANINE EXCEEDS FORMER CAPACITY

DESPITE the disastrous fire which Titanine, Inc., of Union, N. J., suffered several months ago, they now are supplying more airplane dope than they have ever done before. Although the fire crippled the plant to a great extent production never ceased completely. They continued to produce dope for as many of their customers as possible while the new factory was being completed. The new Titanine plant is equipped with the most modern machinery. Manufacturing conditions have been improved and several new processes have been perfected whereby finer finishes can be obtained. The well known Ti-Two Dope can now be finished with an egg shell gloss or a high gloss as desired.

Titanine, Inc., of which Mr. E. G. Davis is manager, is well known among aircraft manufacturers and their products have been used on many prominent types of successful aircraft.

CORRECTED FIGURES ON "AMERICA'S" FLIGHT

INASMUCH as AERO DIGEST was on the press when first figures on Byrd's flight to France were given out, there was no time to check them for accuracy. The official figures are now given as follows:

The gross load of the "America" on the take-off from Roosevelt Field on June 29th was 14,716 pounds; fuel carried, 1,390 gallons. The exact time the plane required to take-off was 32 seconds and the total hours in the air, 42 hours.

WATCH FOR IMPOSTORS!

THE police department of Lancaster, Penna., have requested AERO DIGEST to warn the public that two men, known as Captain Harry Stewart and Skijack Berry misrepresented themselves as being affiliated with Gates Flying Circus and other concerns in defrauding business men of Lancaster of several hundred dollars. This fraud has also been practiced in Bristol, Tenn., with the American Legion.

A reward of $100 has been offered for the capture of these men.

Their operations have hindered the campaign for municipal airports in these towns.

EQUIPMENT

45 Colt Automatic as illustrated $20; 45-1917 Colt or Smith & Wesson Revolver, $19; 38 Colt Pocket or Military Automatic, $20; 22 Colt Automatic, $22; 9 m/m Luger, 4" barrel, $20; 9 m/m Luger, 6" barrel, 200 yd. sight, $22 50; 9 m/m Luger, 8" barrel 880 yd. sight, $22.50; 30 Luger Safety Grip Carbine, 12" barrel, $35; New Thompson sub-machine gun, 45 calibre, each, $175.

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GOVERNMENT BIDS

PROPOSALS FOR PRIMARY TRAINING AIRPLANES — Office of the Contracting Officer, Wright Field, Dayton, Ohio. Sealed proposals will be received here until 10:30 A. M., November 28, 1927, Eastern Standard Time, for the development of a Primary Training Airplane and furnishing proposed airplane in quantities of one, two, five, ten, twenty-five, fifty or one hundred, at Government's option. Further information on application.

GOVERNMENT BIDS

PROPOSALS FOR ATTACK AIRPLANE—Office of the Contracting Officer, Wright Field. Dayton, Ohio. Sealed proposals will be received here until 10:30 A. M., November 8, 1927, Eastern Standard Time, for the development of an Attack Airplane and furnishing proposed airplane in quantities of one, two, five, ten, twenty-five, fifty or one hundred, at Government's option. Further information on application.

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AIR MAIL PLANES SOLD AT AUCTION

TWENTY-SIX Douglas air mail planes were sold at public auction on June 16, in the office of Second Assistant Postmaster General W. Irving Glover. Three of the 29 planes offered remained unsold. The Department received a total of $155,885 for the 26 planes sold.

There were three bidders for the planes —National Air Transport of Chicago and New York, which purchased planes amounting to $108,200; Robertson Aircraft Corporation of St. Louis, $30,050; and Western Air Express of Los Angeles, which purchased planes amounting to $17,635. The highest price paid for any plane was $7,000, while the lowest received was $5,000.

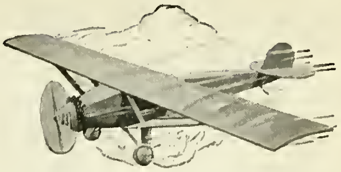
SOME TRIP!

BENNY HOWARD, test pilot of the Alexander Aircraft Co., experienced one of the roughest trips he has encountered when, with Maxwell Strickland, a student at the Alexander Aircraft Flying School, he ferried a new Eaglerock from the factory in Denver to Atlantic Airways, New Rochelle.

Leaving Denver on July 19th they flew via North Platte, Omaha, Moline, Dearborn, Buffalo, Geneva, Albany and New York, meeting bad weather all of the way.

"There was almost no visibility from Geneva to Albany along the Mohawk Valley and Erie Canal and we just skimmed the tops of the hills," said Howard. "The ceiling at no time was over 400 feet. From Albany down the weather closed in and following the Hudson River the fog was so low that we were not able to see the tops of the river banks. At Poughkeepsie we barely cleared the bridge and at the Bear Mountain Bridge we were undecided whether to go under or over. We went over and into a bank of clouds.

"Where the Harlem branches off at New York, weather conditions were terrible. Going through the Harlem we were so low that we were able to see into the windows of the apartment houses that line both banks of the river. It was the wildest ride I ever had! Conditions finally got so bad that we landed on the golf links at Pelham Bay, two miles from our destination." After the weather cleared Howard flew his ship over to New Rochelle.



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AIRPORT ON ROOF OF CHICAGO POST OFFICE

THE new post office to be erected in Chicago will have a 6-acre airport on the roof for the use of air mail planes. It is expected that by the time the building is erected devices will be perfected to make such landings feasible. The Chicago post office will be the model for others.

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RULES FOR THE DANIEL GUGGENHEIM "SAFETY" COMPETITION

THE object of the Daniel Guggenheim Safe-Aircraft Competition is to achieve a real advance in the safety of flying through improvement in the aerodynamic characteristics of heavier-than-aircraft, without sacrificing the good practical qualities of the present-day aircraft.

The Competition will be held on some field near New York City, the exact location to be announced on September 1, 1927. The judges will be: Mr. Orville Wright, chairman, Mr. F. Trubee Davison, Assistant Secretary of War for Aeronautics, Mr. Edward P. Warner, Assistant Secretary of the Navy for Aeronautics, Mr. William P. MacCracken, Jr., Assistant Secretary of Commerce for Aeronautics, Commander R. E. Byrd, and Dr. George W. Lewis. The technical advisers will be three in number: Professor Alexander Klemin, Lieutenant E. E. Aldrin, and Major R. H. Mayo.

PLAN OF COMPETITION

The Competition will be conducted in accordance with the following plan:

Conditions for Entrance

Application for entry will be received on and after September 1, 1927. All applications must be made on forms which will be furnished by the Fund upon request. All applications must be forwarded to the Fund at 598 Madison Avenue, New York, N. Y.

An entrance guarantee of $100 must be forwarded with the application and will be returned upon rejection of the entry, or upon the acceptance and presentation of the aircraft for test. Before any aircraft can be tested in the Competition full information as to its design and construction must be supplied to the Fund. The application must be accompanied by a statement giving in so far as possible the information called for in Appendix I, in which the applicant is required to produce evidence as to the aerodynamic characteristics of the aircraft and as to its general suitability for entering the Competition having the object given above. The Fund reserves the right to accept or reject any application for entry and to close the list of entries whenever, in its opinion, sufficient entries have been received to give a reasonable prospect that the object of the Competition will be achieved.

Any heavier-than-air craft based on any principle and built in any country shall be eligible for entry for the Daniel Guggenheim Safe-Aircraft Competition, provided preliminary evidence satisfactory to the Fund is produced that it will promote the object which the Daniel Guggenheim Safe-Aircraft Competition seeks to further. The employment of design features which, in the opinion of the Fund, are copied from the design of another competitor, may render the aircraft ineligible for entry.

Qualifying Requirements

Every aircraft whose entry for the Competition has been duly accepted will be called upon to demonstrate that it satisfies all the qualifying requirements which are prescribed in Appendix II. In the case of an aircraft which departs radically from conventional practice in securing flight, the Committee of Judges may substitute for those requirements that are impossible of attainment, other tests that will satisfy the object of the Competition.

Safety Requirements

On satisfactory demonstration that all the qualifying requirements are satisfied, the aircraft will be eligible to take part in the Competition proper, consisting of the safety tests and demonstrations in Appendix III.

Prizes and Grants

The winner of the Competition will receive a prize of $100,000, which amount will include the safety prize if previously received as provided below.

The winner will be the competitor whose aircraft satisfies the qualifying requirements and all the safety requirements and is awarded the highest number of points in the four safety tests enumerated in Appendix IV. Should more than one aircraft win the same maximum number of points, division of the prize will rest within the discretion of the Committee of Judges.

The first five competitors, in the order of presentation of their aircraft for examination and test at the designated field, whose aircraft satisfy all of the safety requirements called for in Appendix III, will each receive a safety prize of $10,000.

The Fund will consider an application for special grants toward the cost of transporting duly accepted entries to the place where the Competition is held, which will be at a flying field in the vicinity of New York City, on the basis of one dollar per mile in excess of 1,000 miles up to a maximum grant of $2,000 for any contestant. This grant will not be made until all the qualifying requirements have been satisfied.

General Conduct of the Competition

Notification of the result of their applications will be sent to applicants as soon as possible. The Competition will be held at a suitable field in the vicinity of New York City. The examination of the aircraft and the qualifying and safety tests will be held from time to time as designated by the Fund. The tests will be conducted by a Committee of Judges assisted by a Field Manager and Technical Advisers, selected by the Fund. Decisions of the Committee shall be subject to the approval of the Fund.

The general conditions under which the tests will be carried out are specified in Appendix V.

Closure of Competition

The Competition shall be closed on October 31, 1929, and no aircraft will be accepted for test unless presented for test at the designated field on or before this date.

The Fund may advance the date of the closure if and when in its opinion the object of the Competition has been achieved.

If the date of closure is thus advanced, any contestant whose entry has been duly accepted before the date of the closure thus advanced, will be granted a reasonable extension of time in which to present his aircraft.

Proprietary Rights

The award of prizes shall not entail the abandonment of any proprietary rights on the part of the contestant, but the Fund shall have the right to disseminate complete information pertaining to the aircraft in any way it sees fit.

APPENDIX I

INFORMATION REQUIRED WITH THE FORM OF APPLICATION FOR ENTRY

1. The name of designer and constructor.
2. Date when contestant will be ready to undertake tests.
3. Three-view drawing.
4. Brief general technical description of the aircraft.
5. Type of engine or engines used, with particulars as to official type trials of such engines and fuel used.
6. Weight estimates and estimates of useful load and volumetric carrying capacity and the horsepower for which same are calculated.
7. Any performance estimates and calculations available.
8. Information and sketches as to power plant installation, seating, vision for the pilot, instruments and controls.
9. Any further information available including in the case of aircraft involving a radical departure from normal practice in aerodynamic form:
   - (a) Results of wind tunnel tests or any other data available.
   - (b) Statement as to whether a full scale aircraft of similar type has been flown previously.

In cases where it is not possible to supply the whole of the above particulars when application for entry is made, the fullest information possible in regard to the proposed design should be supplied at the time of making application, and the remaining items of information specified above should be forwarded to the Fund as soon afterwards as possible.

If the applicant desires to withhold any of the above information as likely to divulge valuable secrets, he should give his reasons for withholding the information and the Fund will decide whether such reasons may be considered valid.

APPENDIX II

QUALIFYING REQUIREMENTS

Every aircraft whose entry for the Competition has been duly accepted must be presented for examination and test at the designated flying field on the date designated by the Fund when the tests will be carried out within a reasonable time. Reasonable delay may be granted by the Fund.

Before an aircraft is presented for test the following additional information to that given in Appendix I will be required: (1) Three-view drawing with principal dimensions of important parts; (2) Dimensional drawings and particulars required for verification of stress analysis; (3) Stress analysis in accordance with the methods approved for Civil Aircraft by the U. S. Department of Commerce or by any recognized Government Agency responsible for the issue of Airworthiness Certificates including a statement as to the materials used and the mechanical properties assumed for same. Stress analysis for machines in which sustenation is provided by other means than that of fixed wings shall be required to show a theoretical basis of the strength calculations for the structure as well as the calculations themselves; (4) Balance diagram.

The following are the qualifying requirements every aircraft must satisfy:

Power Plant

The engine or engines used must be of a type which has been submitted to duly authenticated type tests, full particulars of which must be supplied by the entrant. The horsepower of the engine will be considered to be the rated normal horsepower at full throttle as developed with the same or equivalent accessories used in the type tests, and throughout the tests the r.p.m. of the engines shall be limited accordingly. During the whole of the tests in connection with the Competition, the fuel used shall be the standard fuel supplied by the Fund or fuel of the same quality as was employed during the type tests of the engine. The aircraft must be provided with mechanical or electrical means of starting the engine or engines, or alternatively the engines may be started by hand providing a starting gear is fitted which involves no risk of injury to personnel. Starting by direct pulling over of propellers by hand will not be permitted. Any starting gear used will be considered to be a part of the aircraft and must be carried throughout the Competition.

Structural Strength

The structural strength of the aircraft shall be in accordance with the requirements of the U. S. Department of Commerce Air Regulations. Where a designer has reason to deviate from such requirements an explanatory statement should be submitted with his stress analysis. Copies of the U. S. Department of Commerce Air Regulations and of the method proposed for stress analysis by the Department of Commerce will be furnished on request.

If the contestant contemplates landings made with considerable vertical velocity, computations for strength of landing gear covering this condition should be submitted.

If an aircraft shows structural weakness during the Competition, test of the aircraft may be discontinued at the discretion of the Fund.

Performance

When carrying full load the aircraft shall satisfy the following minimum requirements in regard to performance:

MAXIMUM SPEED (corrected to standard air at sea level)—110 m.p.h.

RATE OF CLIMB (at 1,000 ft.)—400 ft. per min.

Useful Load

The aircraft shall carry 5 lbs. of useful load per h.p. "Useful load" shall include the following items: pilot, observer, fuel, oil.

Any special instruments or equipment fitted by the Fund for the purpose of the Competition.

Fuel and Oil

The aircraft shall provide tank capacity for fuel and oil for 3 hours at full throttle at the normal r.p.m. as given in the type tests.

Instruments

The aircraft shall be provided with all necessary power plant instruments required by the engine installation, and the following flying instruments: Altimeter, air speed indicator.

Accommodation

Adequate accommodation and dual control for pilot and observer. For every 10 lbs. of useful load carried in addition to the items specified under *useful load* above, there shall be provided at least one cubic foot of cabin or cargo space.

Vision

Adequate vision must be provided for the pilot.

Fire Risks

All reasonable precautions against fire risks shall be provided in the design. At least one fire extinguisher of approved type shall be carried and placed conveniently for the pilot; the weight of this shall not be included in useful load.

APPENDIX III

SAFETY TESTS AND DEMONSTRATIONS

Every aircraft shall be subjected to the following safety tests which shall be carried out in any sequence the Fund may determine.

NOTE:—The use of devices by which the aerodynamic characteristics of the aircraft can be varied during flight will in general be permitted, subject to the following conditions:

If the device is not automatic and requires operation by the pilot, the operating control must be simple, quick in action and conveniently placed, and must not involve appreciable physical effort by the pilot. If in the opinion of the Fund the safety of the aircraft is prejudiced by dependence on the operation of such device in emergency, the aircraft may be called upon to pass any or all of the safety tests at one fixed setting of the device, in which case the Rate of Climb Test under "Qualifying Requirements" must be passed at the same fixed setting of the device.

Speed Tests

OBJECT: To demonstrate the ability of the aircraft to fly and glide at much lower speeds than is possible in the case of present-day commercial aircraft, thus reducing the risk involved in negotiating forced landings, particularly under conditions of bad visibility and when approaching small and confined landing space.

REQUIREMENTS:

(a) Minimum Flying Speed.
The aircraft to maintain level and controlled flight at a speed not in excess of 35 m.p.h.

(b) Minimum Gliding Speed.
The aircraft to be able to glide for a period of 3 minutes with all power switched off, during which time the air speed shall never exceed 38 m.p.h.

The aircraft will not be considered to have passed either of the above tests unless it is clearly demonstrated that each and all of the controls are properly effective at the minimum speed specified.

Test of Landing Run

OBJECT: To demonstrate the ability of the aircraft to effect a safe landing in a small field.

REQUIREMENTS:

The aircraft shall land with all power switched off, and after first touching the ground shall come to rest within a distance of 100 ft.

The landing shall be made in a straight line; turning, side slipping or trick flying will not be permitted.

The use of braking devices will be permitted provided that control is fully retained until the aircraft has come completely to rest and provided that no serious injury to the surface of the landing field results.

Such braking devices must not require special equipment which is not carried on the aircraft in flight.

Test of Landing in Confined Space

OBJECT: To demonstrate that in case of complete engine failure the aircraft can approach and land in a small confined space surrounded by obstructions, such as trees, buildings, etc.

REQUIREMENTS:

The aircraft shall make a steady glide in over an obstruction 35 ft. high and land in a straight line with all power switched off. After landing, the aircraft shall come to rest within a distance of 300 ft. from the base of obstruction.

The approach to the landing ground shall be straight; turning, side slipping, or trick flying will not be permitted.

The use of braking devices will be permitted under the conditions set out under (2) above.

Test of Take-Off

OBJECT: To demonstrate that the aircraft can take off from a small field and after taking off can climb at a steep angle so as to clear obstructions, such as trees, buildings, etc.

REQUIREMENTS:

(a) The aircraft shall take off after running not more than 300 ft. from a standing start. The aircraft will not be considered to have passed this test if it touches the ground again after taking off.

(b) After taking off within a distance of 300 ft. from a standing start, the aircraft shall clear an obstruction 35 ft. high at a distance of 500 ft. from rest. The approach to the obstruction shall be straight and trick flying will not be permitted. External assistance in starting the run will not be permitted in either (a) or (b).

Test of Gliding Angle

OBJECT: To demonstrate the ability of the aircraft to glide for a reasonable distance in case of engine failure and alternatively to glide at steep angles in order to facilitate the approach to a possible landing ground.

REQUIREMENTS:

(a) *Flattest Glide:* The aircraft shall be able to glide with all power switched off so that the angle between the flight path and the horizontal is not greater than 8 degrees.

(b) *Steepest Glide:* The aircraft shall be able to glide with all power switched off so that the angle between the flight path and the horizontal is not less than 16 degrees. During this test the air speed shall not exceed 45 m.p.h. In both cases the aircraft must demonstrate that all the controls are definitely effective throughout the test, and that it can land safely out of this glide from a useful altitude.

Test of Stability in Normal Flight

OBJECT: To demonstrate that the aircraft is stable under all normal flying conditions, that is to say that if the attitude of the aircraft is disturbed either by gusts or by the application of the controls, the aircraft shall return to its original attitude of its own accord when the controls are left free.

REQUIREMENTS:

(a) *Longitudinal Stability:* The aircraft to be provided with means by which it can be trimmed so as to fly with the elevator control free at any speed within the range of 45 m.p.h. to 100 m.p.h. and at any throttle opening of the engine or engines. The test of longitudinal stability shall be as follows:

The elevator control to be moved toward its maximum extent either backwards or forwards sufficiently to give a fair test of stability and then released. In either case the aircraft must return to steady flight in its original attitude within a reasonable time.

(b) *General Stability:* The aircraft to be capable of flying at any air speed from 45 m.p.h. to 100 m.p.h. and at any throttle opening of the engine or engines with all controls left free for a period of not less than 5 minutes in gusty air.

In the case of a multi-engine aircraft, all the engines may be throttled to the same extent.

During any of these tests, the aircraft must hold a reasonably steady course and if disturbed from its normal attitude, must return to such attitude within a reasonable time and without losing height appreciably.

Test of Ability to Recover from Abnormal Conditions

OBJECT: To demonstrate the ability of the aircraft to recover from any attitude into which it may get either because of disturbances in the air or of incorrect application of the controls by the pilot, or of sudden failure under difficult circumstances.

REQUIREMENTS:

(a) *Test of Ability to Maintain Control in Case of Engine Failure*

The aircraft must demonstrate that it can be satisfactorily controlled by the pilot in case of sudden engine failure when flying at any attitude. In case of multi-engine aircraft, the pilot must be able to maintain control when any one of the engines or any combination of the engines or all of the engines suddenly fail.

The aircraft will be required to demonstrate that in case of complete engine failure (all power being switched off) it will take up a steady gliding attitude when all controls are left free from the moment of switching off the engine or engines.

The aircraft will further be required to demonstrate that if the elevator control is pulled in toward its maximum extent at the moment of switching off and held in that position, the aircraft will remain under control, not get into any violent or dangerous maneuvers, and descend on a steep glide path at a speed not exceeding 40 m.p.h.

(b) *Test of Ability to Recover from Violent Disturbances*

1. The aircraft to be dived with all power switched off until air speed reaches 20 per cent above maximum level flying speed. At this speed it must answer all the controls correctly and effectively. All controls will then be released and the aircraft must of its own accord return to a steady gliding attitude without serious loss of height.

The aircraft may be required to pass this test when trimmed for any speed from 80 m.p.h. to 110 m.p.h.

2. The aircraft to be flown at full throttle at an air speed of 45 m.p.h. trimmed for any speed from 45 m.p.h. to 75 m.p.h. The engine is to be switched off and at the moment of switching off, the pilot is to move any one or any two, or all of the controls in such manner that an abnormal attitude results. Complete recovery is to be made with the aid of the controls and a steady glide to be taken up with a loss of height of not more than 250 ft. from the height at which the abnormal flight attitude was obtained.

The same test is repeated with the exception that when in an abnormal flight attitude, all controls are to be released, and the aircraft must make complete recovery of its own accord and take up a steady gliding attitude with a loss of height of not more than 500 ft.

Test. of Controllability

OBJECT: To demonstrate that the control system is simple and easy to operate and that under all conditions of flight and gliding, effective control in all senses is maintained. Every aircraft must be equipped with three substantially independent controls corresponding to three axes mutually at right angles and these three controls must continue to be substantially independent and collectively effective in the same direction at any attitude of the aircraft from the attitude at maximum level flying speed to the attitude at the steepest glide and at any throttle opening of the engine or engines. The aircraft must clearly demonstrate that it is not subject to complete loss of control when any particular attitude is reached, such as the loss of control which accompanies the phenomenon of stalling.

REQUIREMENTS:

The aircraft will be required to demonstrate the effectiveness of each and all of the controls at any speed and at any attitude from the attitude at maximum level flying speed to the attitude at the steepest glide and at any throttle opening of the engine or engines. This will be tested by making definite and sharp movements of any particular control or controls, which must result in the aircraft making corresponding definite rotations about the respective axes. The controls must not only be effective in producing disturbances of attitude but also in enabling rapid and definite recovery to be made from disturbances.

The effectiveness of any one control or combination of two controls when the other control or controls are left free or held in fixed position must be demonstrated.

The aircraft may be called upon to pass these tests in calm or gusty air.

Tests of Maneuverability in Restricted Territory and on the Ground

OBJECT: To demonstrate that the aircraft can be safely and effectively maneuvered when taking off or landing in restricted territory and when taxying on the ground under its own power without external assistance.

REQUIREMENTS:

(a) *Maneuverability in Restricted Territory*

A square plot, 500 ft. by 500 ft. will be marked off and shall be considered as surrounded by an obstruction 25 ft. high along its entire boundary. The pilot shall take off in any manner he judges best, and climb either above the square plot or outside of it, providing he passes above the imaginary boundary obstruction. The engine may be switched off at any time and the pilot shall land the aircraft within the square plot without passing through the imaginary boundary obstruction.

(b) *Maneuverability on the Ground*

The aircraft will be required to demonstrate that it can be taxied under its own power and without external assistance in any direction in a wind whose mean speed at ground level is at least 20 m.p.h.

The aircraft will also be required to demonstrate that it can be easily handled and moved by ground personnel as required of any aircraft operating for commercial purposes.

APPENDIX IV

BASIS FOR THE AWARD OF THE PRIZE

Points will be awarded as specified in the four following tests:

	Maximum Number of Points Obtainable
1. *Speed Tests*	
(a) 2 points for every m.p.h. less than 35 m.p.h. at which level controlled flight can be maintained..................	10
(b) 4 points for every m.p.h. less than 38 m.p.h. which is not exceeded in a steady controlled glide during a period of 3 minutes........................	24
(c) Any aircraft which obtains a combined total of at least 24 points under tests (a) and (b) will be eligible to receive points for high speed in excess of 110 m.p.h. as follows: 1 point for every 2 m.p.h. in excess of 110 m.p.h. at which level flight can be maintained	10
2. *Test of Landing Run* 2 points for every 3 ft. less than 100 ft. in coming to rest after first touching ground.........................	40
3. *Test of Landing in Confined Space* 1 point for every 2 ft. less than 300 ft. from the base of an obstruction 35 ft. high in coming to rest after gliding in over the obstruction......	75
4. *Test of Take-Off* 1 point for every 15 ft. less than 300 ft. required to take off from standing start	15
1 point for every 10 ft. less than 500 ft. to clear obstruction 35 ft. high from a standing start..............	26
	200

APPENDIX V

GENERAL CONDITIONS

1. Contestants shall comply with the Rules laid down by the Field Manager in regard to all work and conduct on the Field.

2. Aircraft shall be kept at the designated field throughout the Competition unless special authority for its removal is obtained in writing from the Field Manager.

3. Aviation fuel of standard quality will be supplied free of charge but another fuel may be used provided such fuel was used in the official trials of the engine or engines employed.

4. Prior to any tests made by the Fund, contestants may be required to demonstrate in flight by their own pilot that their machines are airworthy and provided with proper controls.

5. All tests in the Competition will be carried out by pilots supplied by the Fund but contestants shall be given reasonable opportunities for instructing the Fund's pilot in the flying of their aircraft prior to the commencement of the tests.

6. Contestants shall supply their own mechanics and transport, and prepare and maintain their aircraft during the Competition at their own expense.

7. The Fund will accept no liability at any time in connection with any risks involved to the aircraft or to the contestant's personnel, or in connection with any third-party risks involved when the aircraft is being flown by the contestant's pilot.

8. The contestant will not be held liable for injury to flying personnel representing the Fund.

9. The Fund may at any time suspend temporarily or permanently any aircraft from taking further part in the Competition if, in the opinion of the Fund, danger to flying personnel is involved, or the object of the Competition is not likely to be furthered by proceeding with tests of such aircraft.

10. Contestants shall be allowed at least three fair attempts to pass any test.

11. Alterations to the aircraft during the Competition may be approved, but any such alteration may entail requalification in any or all of the tests at the discretion of the Fund. Unauthorized alterations may entail elimination from the Competition.

12. Variations in the form of features of the aircraft which cannot be conveniently and easily effected by the pilot during flight, as, for example, variations in angular settings of supporting surfaces, will be regarded as alterations.

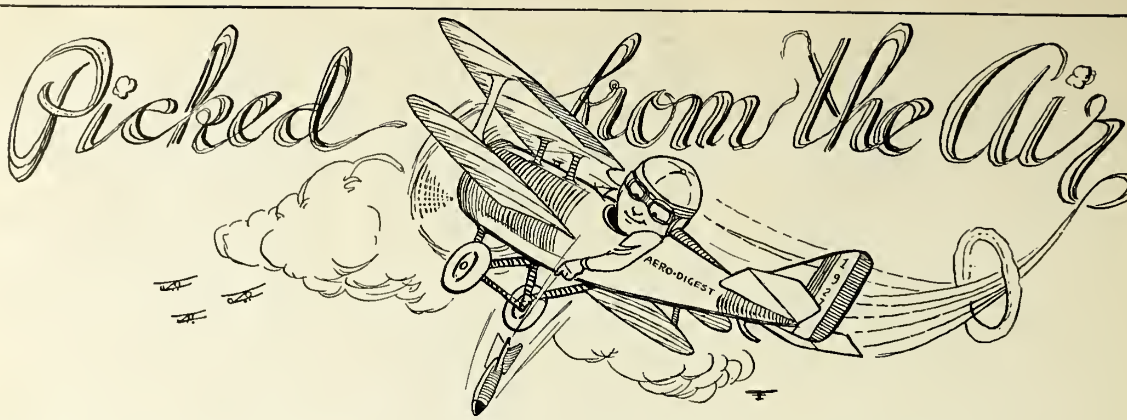
13. The same design of propeller shall be used throughout the trials. In case of propeller breakage or damage a new propeller of identical design may be substituted. Propeller blade settings must be the same throughout the test except that a pitch-varying mechanism may be used if it can be operated from the pliot's cockpit during flight.

GUGGENHEIM AIRLINE EQUIPMENT LOANS

As a result of the great progress in air transport in the United States, the trustees of the Daniel Guggenheim Fund for the Promotion of Aeronautics have authorized equipment loans for the operation of passenger air lines in the United States. Equipment loans are and have been used extensively in the development of American railroad and street railways and the trustees of the Fund believe the same principles of financing should be applied to air transport.

The equipment loan plan of the Guggenheim Fund will not only provide equipment for the demonstration of performance but will also provide a concrete example of aeronautical financing upon which further financing can be developed. The loans will be made only to existing operating companies for the purchase of the most modern, multi-engined planes of maximum safety and comfort so that an actual demonstration of performance and safety will be available as an incentive for further development of passenger air lines in the United States.

Planes bought under the equipment loan provision must be designed to fly should one of the motors be disabled. The route or routes over which the new equipment will be flown must be approved for passenger carrying by the Aeronautical Division of the Department of Commerce.



$ $

AERO DIGEST will award a prize of $5 each month for the best humorous contribution published. Only those pertaining to the aircraft field will be considered. Address the "Picked From The Air" Department, Aero Digest, 220 West 42nd Street, New York, N. Y.

C. Kenneth Bowen, Bellows Falls, Vermont, won the prize for August.

Pilot: "Mr. Jones sure must have a big interest in aviation. He has just made his house into a biplane."

New Student: "How come?"

Pilot: "He just added two wings."

$ $

Have You Ordered Your Colonel Lindbergh?

Gentlemen:

As you are probably aware from a perusal of the public prints, the demand for Colonel Charles A. Lindbergh now exceeds the supply.

There exists an impression that there are not enough Charles A. Lindberghs to go around. This, we take pleasure in informing you, is no longer true.

Alert to a great public need and anxious to serve in an unprecedented emergency, we have organized a corporation known as the Charles A. Lindbergh Supply Company of North America. This company is in a position to offer for a restricted time unlimited supply of Charles A. Lindberghs. These are, it is true, substitutes or what the automobile industry would classify as "seconds," but we have taken great care in the selection of these men and can guarantee that it is almost impossible to tell them from the original.

We have put in a stock of over 1,200 young men over six feet in height, blonde and of the same general measurements as the original. They all resemble Colonel Lindbergh closely, and we are now drilling them in the Lindbergh smile, the Lindbergh voice, the Lindbergh walk, the Lindbergh gestures and the Lindbergh charm. It has been impossible to get at such short notice 1,200 such young men of Swedish descent, but we have a large number of whom this is true and can rent them out to reception committees at a slightly increased charge.

If you wait to receive the original Colonel Lindbergh your city will not stage a reception until well into the winter. By sending us your order at once you will enable us to ship you within twenty-four hours one of our No. 2 Lindberghs, an exact duplicate of the original, and up to specifications in every way.

Avoid friction! Eliminate hard feeling! Banish uncertainty! Order your Lindbergh from us today! Do not delay!

Hoping to hear from you by wire, we are,
The C. A. Lindbergh Supply Company,
Julius Zilch, Pres.

P. S.—We furnish three sandwiches and two letters of introduction with each Lindbergh.

"I think Lindbergh did a wonderful thing!" exclaimed Mrs. Percival Onkersby-Onkersby Britz. "Think how these transatlantic flights will cut down the time between the New York marriage and the Paris divorce!"

—H. I. PHILLIPS, "The Sun Dial"
Courtesy of the New York Sun and The Associated Press.

It was early yesterday morning at Mitchel Field. The Spirit of St. Louis was making a few silver circles before its reluctant descent.

"It's Linboig!" shouted one of the spectators.

"Not Linboig. Lindbergh," corrected a near-by pedant.

"Well," said the shouting spectator, "he's flying Linboig's plane."

The next time New York celebrates in the fashion of Lindbergh day we want at least twenty-four hours notice so that we can memorize a telephone book.

All Right

Sir—Sinclair Lewis did write a novel about an aviator—a Swede aviator—several years ago, called "The Trail of the Hawk."

Russell Crouse, "Left at the Post."
Courtesy of the New York Evening Post.

Messrs. Acosta and Chamberlin remained up in the air for 51 hours and 12 minutes without a break. What a mean filibuster these boys could throw.—*San Diego Union.*

Surprize Packets.—Reservations may be made for ladies in boxes only.—*Prospectus of a New York banquet to Colonel Lindbergh.*

An aerial taxi company has begun business in Detroit. Passengers are hoping that there will be no tips.—*New York Evening Post.*

Colonel Lindbergh must now stand the strain of non-stop flights of oratory.—*Brooklyn Eagle.*

Boston enthusiast says that Charles A. Lindbergh could not help being a winner because his initials spell "Cal."—*Philadelphia Inquirer.*

Some fellows start for home only ten blocks away and don't come as close to it as Charlie Lindbergh did to Europe.—*American Lumberman.*

Charley Lindbergh is one Missourian who didn't have to be shown.—*Indianapolis News.*

A man has started to ride from Buenos Aires to New York on horseback, and we don't know whether he's kidding Lindbergh or the Prince of Wales.—*New York Evening Post.*

London and Paris have named cocktails after Lindbergh, and if they're made of American liquor it might be a good idea to serve a parachute with each drop.—*New York Evening Post.*

It won't be long before we'll read, "Dry Air Service Captures Rum Plane".—*Brooklyn Eagle.*

It seems only a question of time when some one will hop off this little globe entirely.—*Asheville Times.*

Hasn't "Say it with flyers" become just as serviceable a slogan for Uncle Sam as "Say it with flowers"?—*Beloit News.*

Over 91%

of the manufacturers of aircraft who expect results from their advertising use

AERO DIGEST

The extracts from letters quoted below tell clearly why manufacturers and dealers put AERO DIGEST first on the advertising list.

F. W. Dalrymple
President of Atlantic Airways, Inc.
New Rochelle, N. Y.

"The response to our first quarter-page advertisement which appeared in July AERO DIGEST was immediate! From the states which represent our territory, we have received over fifty inquiries including four sales which were direct responses to the advertisement. The result is that we have been selling an average of two Eaglerocks a week. We will use a full page in August."

(Signed) F. W. Dalrymple.

D. A. Graham
The Johnson Aircraft Corporation
Dayton, Ohio

"We placed a page announcement in the January issue of AERO DIGEST. As a result of this one ad we have received 192 inquiries which mentioned AERO DIGEST and some 700 other inquiries which did not mention the DIGEST or any other magazine. It is probable that at least several hundred of these were also due directly to this single advertisement in AERO DIGEST.

Furthermore the response we received from this announcement came from every state in the United States and from 14 foreign countries.

We are very glad to state that we consider the results of our advertising nothing short of remarkable and AERO DIGEST demonstrated its pulling power in an extremely satisfactory manner.

(Signed) D. A. Graham.

Aero Digest offers advertisers a circulation that covers every phase of the aircraft market.

Write for our sworn circulation statement and advertising rates.

AERO DIGEST
THE MAGAZINE OF THE AIR

220 WEST 42nd STREET NEW YORK, N. Y.

FOREIGN AERONAUTICAL NEWS IN BRIEF

Compiled from the foreign aeronautical press, the Automotive Division and the Transportation Division, Bureau of Foreign and Domestic Commerce

ENGLAND

CAPT. F. T. COURTNEY is experiencing some of Commander Byrd's difficulties in having to delay his transatlantic flight due to bad weather conditions. Radio trouble and a few minor adjustments also have contributed their share to his delay. On June 28th, Capt. Courtney brought his Dornier Wal equipped with two Napier Lion engines from Friedrichshafen to Calshot Naval Flying Base, Southampton. He plans to make the hop with his second pilot, Flight-Lieut. F. W. M. Downer, and mechanic R. F. Little, to New York from Valentia, Ireland via Newfoundland; overhaul his engine in New York and return across the Atlantic within a few days.

THE eighth Royal Air Force Display held at Hendon on July 2nd provided not only a thrilling and spectacular program but showed good technical progress in military planes and exceptional skill in piloting.

A highly realistic aerial attack on London by "hostile" bombers and the battle that ensued with the defending fighter squadrons; the attack on and destruction of a kite-balloon; the air maneuvers made to music transmitted to each pilot by radio-telephone; along with the many other events made up a most impressive program.

AN aerial tour that has become increasingly popular is that which, although occupying only 7 days, enables the tourist to see from the air and from the ground 6 European capitals in as many days. The tourist starts from London at 6.30 a. m. and Paris, Zurich, Vienna, Prague, Berlin and Copenhagen are visited in turn, an afternoon and night being spent in each city. Although the actual mileage traveled is more than 2,500 only about 33 hours are spent in flying, the rest of the time being available for sight-seeing and amusements.

There are special services from London to Paris for overnight stops (nightly); from London to Le Touquet (daily); from London to Ostend (week-end excursion). Imperial Airways offer the above services.

AUSTRALIA

REGULAR aerial travellers are becoming so numerous on the Aerial Services, that Australian Aerial Services, operating between Melbourne, Riverina, Adelaide, Broken Hill and Cootamundra, issue a season ticket which is valid for a period of 12 months over any of the air services operated by this company. The tickets are being sold for 40 pounds each, and may be issued in the name of a family or a firm, in which case a number of persons who are bona fide members of the family or firm concerned may use the ticket without extra charge.

THE Brisbane Flying School has been in operation for two months and now has 8 pupils training.

Since the inauguration of the Airways Flying School last April, 21 pupils have received instruction. In all, nearly 100 hours have been flown by pupils in the school's two "Moths".

THE Airways mail planes, operating from Wyndham to Perth and return, carried 19,477 letters during the month of April, and 6,475 lbs. of freight and 122 passengers in May. 17,670 miles were flown during the month of May, making a total mileage flown by the company of 798,254 miles.

THE Cloncurry-Normanton extension to "Qantas" route, which runs from Charleville to Camooweal and return, will allow Brisbane and Normanton to be linked in 2 days 20 hours as against a former trip of 11 days, and places Normanton within 5 days of Melbourne, 4 days of Sydney and 2 days of Townsville. It is expected that this facility will induce sportsmen and tourists to visit the district in which an ideal winter climate and good fishing and shooting can be obtained.

CAPT. KINGSFORD SMITH and Mr. C. T. P. Ulm arrived at Mascot aerodrome Sydney, on June 29, after having flown around Australia in ten days on a Bristol Tourer with 240 h.p. Puma engine.

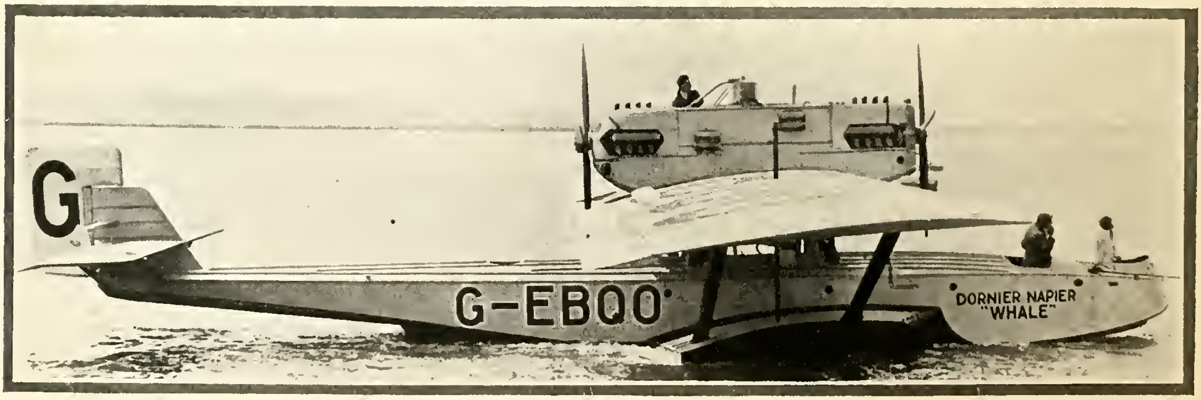
CANADA

CHARLES BURNS, president of Carling Breweries, Limited, donor of the $25,000 prize for 3900-mile non-stop flight from London, Ontario to London, England, to be made within four weeks, has announced that the Stinson monoplane, equipped with Wright Whirlwind engine, being built for the trip will be piloted by Captain W. Roy Maxwell, director of Ontario Government Air Service accompanied by Captain Terry Tully, chief pilot of the northern Ontario Government Forest Fire Patrol. Maxwell is a native of Toronto, Ontario, and Tully of Carracastle County, Mayo, Ireland. They were picked from one hundred and seven applicants.

THE Canadian Minister of National Defense has announced that the aviation activities of his department is reorganized by separating the civil duties from the military organization. Three branches are developed under the Deputy Minister to consist of civil Government flying, administrative work and aeronautical engineering.

The civil flying branch is to handle forest surveys and other Government services. The administration branch will operate in connection with air regulations the licensing and certification of civil aircraft pilots, are engineers, air harbors, the location of air routes and assistance to civil aviation. The aeronautical engineering branch will deal with the control of technical questions of design and research works. The training and organization of the Royal Canadian Air Force and reserves will continue under the jurisdiction of the general staff.

THE Manitoba air mail was flown on June 1. The Post Office Department of Ottawa has granted permission to Western Canada Airways, Ltd. to carry mails to the Central Manitoba section of the Lake Winnipeg mining area and air mails will be carried in all passenger planes operating from Lac Dubonnet this summer.



Acme.

Captain F. T. Courtney's Dornier Napier "Whale" in which he will attempt a flight from England to America.

CZECHOSLOVAKIA

THE international aircraft exhibition at Prague, June 4th-16th, was visited by French, English, German, Rumanian, Polish, Bulgarian, Esthonian and Latvian delegations. Exhibits from 10 different countries—France, Belgium, England, Italy, Roumania, Poland, Switzerland and Sweden were on view.

Czechoslovakia's air industry has made a great advance especially in sport machines. The "Avia" planes have repeatedly scored important successes abroad, among them a victory at Orly in France, one at Brussels and the winning of the Coppa d' Italia for two years in succession at Rome. Messrs. Bondy & Co., manufacturers of the "Avia", in addition to producing machines of its own designs, manufactures DeHavilland 50's on license which are in use on the Czechoslovak State Lines, operating regular interval services within the Republic.

Military machines are also an important output of the Czechoslovak aircraft industry and just recently great progress has been made in commercial machines. In the Balkans and in the Baltic States, Czechoslovak military machines are very popular, while the commercial type has found a market in Bulgaria.

Progress has also been made in the output of aircraft engines. The Skoda Works are newcomers in the manufacture of aircraft, especially motors. They have also established a factory for construction of motors in Poland. The Aero Company, another Czechoslovakian airplane manufacturing company has started a branch undertaking in Bulgaria.

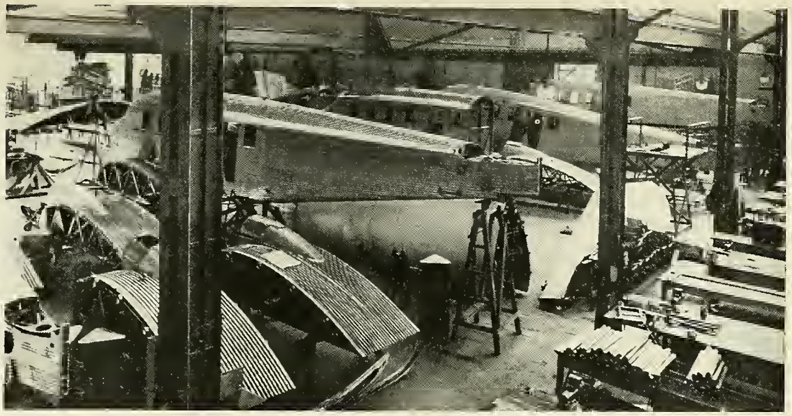
The exhibition gave an excellent survey of Czechoslovak aviation. Her aircraft industry can now meet all home needs, and the recent exhibition shows that it is capable of penetrating to foreign markets.

Among the foreign exhibits England was represented by Vickers, exhibiting a complete fuselage with armaments in its place and furnished with every conceivable instruments and appliance. The searchlight of the French firm of Bernard and Turenne attracted much attention, while Italy had an imposing display, the center of which were two hydroplanes. Germany exhibited both planes and motors, and Rumania, exhibiting for the first time, sent three machines of home manufacture. There were also collective exhibits displayed by the Czechoslovak Ministry of National Defense, the Post Office authorities and the Meteorological Institute.

An international balloon race was held in connection with the exhibition.

THE War Ministry has authorized Colonel Skala of the Czechoslovakian air force to start on a flight from Prague to Tokio between July 25 and 30. The aviator expects to reach his goal in seven days in five stages, the first being from Prague to Moscow. He plans to return by the same route and with the same plane.

The exact time of his departure will be kept secret in order to prevent the presence of crowds at the flying field.



All-metal 3-engined Junkers planes under construction in the factory at Germany.

GERMANY

PILOT ZIMMERMAN, who flew to the Orient on the Junkers G31, has broken the record for speed with 2,000 kgs. useful load made by the Rohrbach Roland (199 k.p.h.). On a triple-engined Junkers G24 with 2,000 kgs. useful load, Zimmerman attained an average speed of 207.267 k.p.h. during a 100 kms. flight from Aken to Elster.

FEW accidents in German air service are shown in a Deutsche Luft Hansa report for 1926. There was one death among the 82,932 passengers carried and one among the flying employes and none among the ground employes or others. There were 15 accidents—11 to passengers and 4 to flying employes. A total of 17,243 Reichsmarks was paid as indemnities for property damages to others.

The company reports that it is developing an elaborate safety program and paying particular attention to the construction of safe planes.

LUFTHANSA planes covered 600,000 miles in that month, carrying 11,000 passengers and 230 tons of baggage, freight and mails.

Two new lines have just been added, covering the Harz and the Riesengebirge. The first starts from Brunswick and makes landings at Goslar, Wernigerode, Quedlinburg, Halle and Leipzig. The second has as terminals Breslau and Berlin, and makes intermediate landings at Goerlitz, Cottbus and the Riesengebirge.

AN agreement for through traffic arrangements has been made between the Lufthansa and the railway company in Germany. The managing committee of the International Railway Union has approved regulations for the forwarding of air passengers' baggage by railway.

AN average of 58 planes leave or arrive daily at Tempelhof Aerodrome. The Lufthansa fleet comprises 50 triple-engined passenger planes, 18 twin-engined passenger seaplanes, 137 single-engined passenger planes, and 15 planes for newspaper service.

FRANCE

WHAT is believed to be the first world's record in the new Light Airplane Class, created by the F. A. I. this year, was made on June 25 in an Albert monoplane, with 40 h.p. Salmson engine, when M. Magnard flew at the speed of 99.77 m.p.h. A few days later M. Edouard Albert, designer and constructor of the monoplane, reached a height of 20,356 feet.

THE Compagnie Internationale de Navigation Aerienne has announced daily (except Sunday) air service from Constantinople to Paris via Bucharest, Belgrade and Vienna, for the 1927 summer season.

Planes are to transport freight and postal matter as well as passengers. Passengers are transported free to and from Constantinople to the flying field in San Stefanto.

Fare amounts to 245 Turkish pounds, or about $175. Each passenger has a right to 15 kilograms of free baggage.

IN the French budget proposals for 1928 Aeronautical Division of the Ministry of Commerce has requested that appropriations for the development of French civil aviation be increased from 170 million francs (the 1927 total) to 195 million francs in 1928.

The principal increases requested are as follows: for subsidies to operating companies, 91,000,000 francs as compared to 78,500,000 during 1927; for installations in connection with technical and industrial aeronautical development, 6,000,000 francs instead of 3,130,000 francs in 1927. Five million francs are requested in the form of a new budget item to cover the expenses of technical and industrial research.

According to the above advices, the French Government plans to spend on the encouragement of civil aviation during 1928 the sum of $7,454,250 and actually appropriated for the same purpose in 1927 $6,655,500 at current rates of exchange.

THE French International Michelin Cup was won by Captain Chales for his flight round France, a distance of 1,710 miles, with fourteen landings, in 12 hrs. 14 mins. 37 secs. The cup has been held since 1925 by Pelletier d'Oisy.

THE 1927 NATIONAL AIR TOUR

(Continued from page 136)

Three -Tour Referee Ray Collins increased his popularity with the flyers by the way he handled all the technical problems. He has put enthusiasm and hard work into the Tours that have counted largely among the reasons for their success.

It was a pleasure to find among those who greeted the party at New York, former Postmaster General Frank H. Hitchcock, who established the first air mail line when head of our postal service in 1911. The previous year he flew personally over Mineola field, in one of the early Wright machines, and dropped there the first sack of mail ever carried in an airplane. As he greeted the Tourists, and "went up" in one of the planes, General Hitchcock could take much satisfaction in the manner in which his vision of 17 years ago, of the possibilities of the airplane as a mail and commerce carrier, are being realized.

None of the Tourists will forget the general and generous hospitality which met them all along the cruise. Louisville and Tulsa stand out in their memories, although where everyone was so cordial it is invidious to mention any particular city. Especially did the Southland live up to its reputation.

Paul Braniff's cheerfulness and sportsmanship make up for any deficiency in his OX5. He was right in the race while he lasted.

"Out of luck" tells the story of the other Eaglerock. It was well up in the scoring when it threw a connecting rod loose into the motor, and Pilot Cloyd Clevenger negotiated an offhand hillside landing. With a new motor Clevenger, McInaney and Leonard, his passengers, joined the bunch later at Memphis and completed the Tour.

If the attendance is falling off in some of the larger cities that the Tour has visited more than once, it is growing in the smaller cities. All the countryside was out at Geneva and some of the other points.

In the Ford transport, we set our altimeter at zero at the Cleveland airport, and then crossed the lake toward Kalamazoo at 100 minus. First time we had ever "gone up" to a lower level than that from which we started. Three motors let us skim the waters without a care.

When the Ford tri-motor entry, the similar Navy escort ship, and the Standard Oil Company's sister ship were in the air together at the start of the Tour, it was our guess that this was the first time three of these big jobs had cruised along together. The Standard Oil plane did 15 miles or so with us and then pointed toward Chicago with her load of oil magnates.

Orville Wright greeted every ship at Dayton, and was introduced to its crew by Referee Collins. All were glad the Tour included this pilgrimage to the birthplace of aviation, and this chance to meet the man who flew first of all those who now go into the air.

Busy Factories

The Tourists missed Walter Beech, but found him and his busy factory at Wichita. Walter isn't the only busy airplane manufacturer, however. Every one on the Tour and off it, according to all reports, is from 50 to 250 planes behind his orders, and the word everywhere was that, just now, everyone who can make a good airplane can sell it.

One way to get people to talking about your town is to paint its name on the roofs. The pilots were grateful for such slight help as they had along that line. They may never have heard of Emlenton, Penn., a town of 1,000 people, but they will not forget it in telling the flyers where it is in this simple and friendly way.

The long leg from Louisville to Memphis, against a headwind, was a real test. Cagey pilots figured out where to land on the way and take on some more gas.

Minor Troubles

One purpose of the Tour, of course, is to develop the strong points and the weak points of planes and engines. After Eddie Stinson had made 24 landings with his heavy load, something bent in his landing gear as he struck a rough spot at the end of his roll at Grand Rapids. It simply gave everyone a chance to show how glad they were to help him fix it, and his plane was ready after lunch to take off and lead the way into Detroit.

Except for Clevenger's misfortune, the motor trouble was of a minor nature and cost no one a place in the score.

A Chivalrous Company

The air crusaders have displaced the steel helmet with Eddie Stinson's straw hat, and the breastplates and chain armor of earlier days with the duralumin cabin and the welded fuselage. The figure of speech lends itself further to the air crusade, for its company of chivalrous people enjoying an unprecedented experience, were sweet and pleasant and courteous and considerate all the way around.

Lieutenant J. G. Breene was not only a good pilot for Referee Collin's army ship, but an efficient assistant scorer. Commander A. C. Miles and Lieutenant H. R. Bowes were considerate hosts to the newspaper men and others who traveled in the Navy plane.

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A NOD AND A WINK

(Continued from page 152)

are. If that boat could fool me, who knows what an airplane sounds like, it could easily fool these people, most of whom had never heard a plane in their lives. No, I don't think the *White Bird* got here. The coast is quite thickly settled, and there are many people living along the one railroad. Surely some of them—say a hundred—would have heard the plane, even late at night or early in the morning. Of course, no man can say that the plane isn't here—but I haven't met any Newfoundlanders who think it is here—except the few who think that they heard it. Perhaps they did; perhaps they didn't. I don't know. But I have come to my own conclusions, and nothing short of the finding of the plane here will convince me that I have judged wrongly—which, of course, I may easily have done. It is only one man's idea.

Our last flight was made while we were waiting to return to New York. We flew again over the Sand Pond region, an upland district that drains into Robinson's Brook. Two men, including a semi-Indian of advanced years but retarded mental development, came out of the woods with a story. They had been camping near a lake when this Indian saw a large white whale suddenly rush out of the sky and hurl itself into Sand Pond. The Indian, whose sister had been ill, naturally concluded that this was a token sent by the evil one to inform him that his sister had arrived safely in the infernal regions, and was now chasing asbestos rabbits through hell, or whatever it is when a female Indian gets to that plane of existence. "Ugh!" said the old Indian, which, being translated into the vernacular, means, "Now ain't that a hell of a note?" Upon which he and his friend departed from there as fast as foot power would take them. That was probably the only time when that Indian regretted the absence of motor roads and fast automobiles in Newfoundland. Anyhow, out he came, with the devil after him—he could distinctly see the devil leaping from rock to rock and hear him emitting raucous howls. When he got out and calmed down he took a look at the Fokker Universal of our expedition, and concluded that the white whale he had seen was a plane like ours—probably it was the missing French plane.

Great excitement prevailed. He was a bit hazy on dates, but convinced himself that he had seen an airplane, no matter what the date was. So off we went, absolutely without hope that there was any truth in his story, but unwilling to overlook even the slimmest clue—and this was a slim one if ever there was one. We search and researched that entire region, and found nothing. Meanwhile, some amiable ass had informed the world that the plane had been found, which gave rise to many false hopes, none of which were started by either member of this expedition. We had sent no telegrams until after our return from the flight, when we informed New York that the story was without foundation.

This country is full of rumors and ghost stories, for these people are many of them very simple—which is not to say that the average Newfoundlander is by no means simple. But there are probably a larger percentage of simple, child-like people here than there are in more settled communities. And they believe anything. They'd make excellent voters down in the States. In fact, I think they'd pass without notice as standard voters. And what a help that would be to Wayne B. Wheeler and the Anti-Spitoon League. They have one woman here who is in direct and constant communication with the spirit world—she'd do pretty well in Washington. Her latest communication was with old Captain Butt, long deceased. He had been a hell-roaring skipper in his palmy days, and it didn't seem possible to those who knew him that death had changed him much. Anyhow, this lady got him on the spiritual wire and found that he was now captain of a palatial yacht which was used to tote spirits around up in Heaven when they got fed up with staying in one part. One Jack Delaney, upon hearing this report of the late Captain's activities in the maritime Heaven, remarked, "Well, begobs, if I knows old Cap'n Butt, it ain't no crew of angels as he's got aboard."

Well, folks, the tri-weekly train, the working-girl's friend, is about to arrive and carry this word of cheer to you, so I'll have to stop, though I could wander along for hours telling you about these nice people. But you should come up and see them for yourself, live with them, go fishing with them, dance with them, yes, we have country dances here, and very nice, too—and really know them. They're kindly, friendly, obliging. Most of them are poor, their lives are hard, but they'll make you very welcome in their country and do their best to make you happy. They're rather serious—life is serious here—and if they ever read this they may think I am unkind to joke about them; but I don't mean to be, and you who have known me so long know that it is only my way. Anyhow, I'm as much a source of amusement to them as they are to me. They speak of me as "that writin' flyin' feller' and think I'm a very queer old stick indeed.

Which, perhaps, I am.

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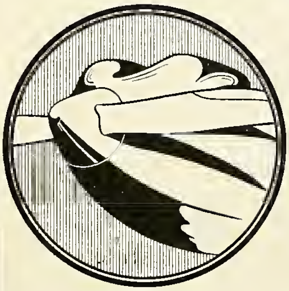

THE AIR FORCE AT SEA

(Continued from page 148)

tion aircraft. Too much performance cannot be built into this type. It will most surely be attacked. If an observation mission is to stay in the air maximum self protection should be built into the spotter. This entails good maneuverability and climb, and speed consistent with the other two attributes. Good vision for the pilot and observer is paramount. A pilot placed under a top wing is blind as a bat in a dog fight which is often the lot of the observation pilot. Since the weight of communications apparatus should be lowered with future development the spotting plane should be able to carry enough observation gadgets and still put up a very good show in combat.

Apparently self protection was entirely lost sight of when the navy adopted a single-engined bomber for a three-seater spotter. Why three people to carry out a spotting mission? In the Royal Air Force the pilot not only flew the observation mission but also did the observing and communicating, a scheme which has many merits worthy of consideration. The observer was a machine gunner on the job to locate enemy aircraft likely to attack and to ward them off if they did. Certainly two people with a good range of vision are sufficient to carry out any type of observation mission.

Bombardment aircraft should be able to carry the most effective load and perform in spite of the load. The principle of self protection applies to the bomber as well as any other type for while the journey to the objective may be made comparatively simple by close protection or elimination of opposing enemy aircraft by fighting patrols, the bomber will have its own battles to fight and plenty of them. It will be the focal point of enemy attack for after all it carries the chief threat of the air arm. The fighting plane can harm other aircraft, the spotter may see things which the enemy may desire to hide but there exists no threat quite so undesirable as the bomb load which can be carried a hundred miles from base and deposited on the head of the enemy admiral with so much precision. Naturally then the bombers will be kept off at all costs.

The most natural bomber to build therefore is the one which is hardest to keep from its target. Without desiring to be critical one would point out that about the easiest bomber to keep from a target is the heavy lumbering single-engined type which was built for several other purposes besides bombing. Compromises are antidotes of performance, and the airplane that tends to become the jack of all trades is the master of none. If one desires to build a bomber let bombing be kept uppermost in the mind of the designer.

First select the load. About the best bomb we have is the 1,100 pounder. Since the naval treaty has stopped capital ship improvement and since a 1,000-pound bomb properly placed will make a battleship awfully sick, why not limit the bombers load to 1,000 pounds. After all the problems of storage, handling on carrier elevators, landing on and launching from the carrier's deck limits the size of the bomber. If the load were held at 1,000 pounds a compact and handy bomber to carry this load could be built around two engines totalling to 1,000 h.p. Gunners could be mounted in the engine nacelles. With one gunner fore and two aft, and with the maximum maneuverability which can be built into a ship of this size, it could ward off a three to one attack.

To this date we have considered a bomber as an airplane designed to stagger off with a maximum load. For a night bomber this will suffice but for bombardment in face of an enemy, performance comes first, load second; for what avail is the big load if it cannot be properly dropped.

The 1,000-pound bomber, by the reduction of fuel load or by overloading, could handle the standard torpedo. Torpedo attacks by day will not be terribly successful for as a target it would be gauged in two dimensions only and a veritable wall of water can be thrown up in front of the torpedo carrier flying close to the water by every gun which can be pointed in its direction. Anti-aircraft guns alone will not be depended upon. At night a torpedo attack preceded by a copious launching of flares should be something to think about. At any rate since the 1,000-pound bomber above outlined would have surplus performance and since when used for a torpedo load at sealevel, it would have no need for performance other than weight carrying, it is safe to assume that the measure of surplus performance for carrying the 1,000-pound load and defending itself would enable it to accept the overload of the torpedo and still do its job.

For scouting work the 1,000-pound bomber could be well loaded to the limit with fuel instead of bombs and with its high speed it would be able to cover an appreciable area. The principle which one enunciates is simply this: build the most desirable bomber, and if it can stagger alone with a torpedo well enough. If it can do these things it naturally follows that it can do a very good job of scouting.

The matter of scouting with aircraft is after all a moot question among naval thinkers so one hears, especially as at present organized. The principle of scouting generally with fast light cruisers and in detail by high speed observation planes launched therefrom has many adherents. The three-purpose plane is undoutedly efficient. It can cover a

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considerable distance, but its futility in face of an enemy is its weak point. One would hardly expect a scouting plane to make contact with the enemy without running afoul enemy aircraft; and once caught these slow lumbering planes would soon fall a victim of more agile craft bent on its destruction. The principle of self protection is distinctly violated in this type. Of what avail is it to obtain information if it cannot return this information to the proper point?

Coastal and high seas patrol problems are principally technical ones, stress being laid on the range of such craft. Tactical problems hardly exist. The bulk of the naval air war in the late unpleasantness was confined to such duty and history chronicles a vast amount of very useful work done on submarine patrols and many heroic incidents.

One passes on this rather sketchy commentary for what it contains in ideas which after all arise as a reflection of what has happened in the past.

MANUFACTURE OF AIRPLANES

(Continued from page 178)

stringers which give stiffness to the covering. Hand holes and inspection plates are placed at convenient intervals in the sheeting to permit reaching into the float and to provide a means for inspection from time to time during service. Wing tip floats are much more simple to build than the main floats. The covering usually may be made of two to three pieces formed over two transverse bulkheads to which integral struts are attached for assembly to the wings.

Power Plant and Fixed Equipment

The term power plant includes the engines, starting devices, engine controls, fuel and lubricating systems. Fixed equipment includes instruments, surface controls which control the airplane in flight, furnishings such as the seats, floors, windshields, etc., and the electric wiring.

As soon as the fuselage frame has been assembled and removed from its jig, the power plant—in the case of a single-engined airplane—and fixed equipment items may be installed. Flooring, consisting of veneer usually about 3/16 of an inch thick or duralumin sheeting, corrugated for stiffness, is placed in the cockpit compartments. The controls which operate the ailerons, rudder, and elevators and which have previously been assembled together are securely bolted in place and checked for movement. Seats are installed. These have been made up on the bench usually from veneer and aluminum and are ready to be put in place. Instruments, assembled in their boards or panels, are now put in the cockpits in plain view of the pilot. On these depend to a great extent the safety of the flyers, especially in bad weather such as fog. Engine instruments are on one side and navigation instruments segregated on the other. The tachometer, which registers the number of revolutions of the engine per minute—and the air speed meter are kept together as they are used simultaneously by the pilot to determine in a fog whether he is descending or climbing too rapidly.

The engine is being mounted on the engine mount by another group of mechanics while the fixed equipment is being installed. The gasoline tank or tanks are carefully put in place and padded wherever there is a chance for them to become chaffed by other parts of the airplane. The oil tank is also carefully installed and the piping for both fuel and oil systems assembled in place. Radiators and piping are not mentioned here as they are not required on the most modern type airplanes in which air-cooled engines are used. The fuel lines ordinarily consist of ⅜ inch to ½ inch diameter copper tubing. A shut-off cock is placed in the line adjacent to the tank outlet connection so that in case of leakage in the lines the tank supply may be shut off. A hand operated pump is always installed to facilitate starting and to insure a fuel supply in case anything happens to the power driven fuel pumps. Gravity tanks also are often installed for emergency use. The oil pipes are installed in two sections, one section being attached to the engine and the other to the oil tank and fuselage structure. These two sections are coupled together with flexible connections so that engine vibration will not be carried through the pipes and cause breakage in the line.

The engine control units consisting of throttle spark, and mixture controls are attached in the left hand side of the cockpits. This leaves the pilot's right hand free to operate the surface controls. Control rods connect from these lever units forward to the engine and are so installed that a forward motion on any control lever speeds up the engine; that is, the throttle is opened and the spark is advanced. After these installations are complete and the inspectors have gone over each detail assembly for final approval the airplane is ready for a ground test. This test consists of running the engine while the airplane is fastened to the ground to make sure it is in order.

The airplane is now ready for delivery. If it is to be shipped to its destination all gasoline and oil is drained from the tanks. The machine is thoroughly cleaned and touched up with paint in and around the cockpits where it may have become scratched or marked during the ground test. The fuselage and wheel type landing gears are usually crated together in one box and the wings and tail surfaces packed in a wing crate. Floats are crated together and the machine is then ready to ship.

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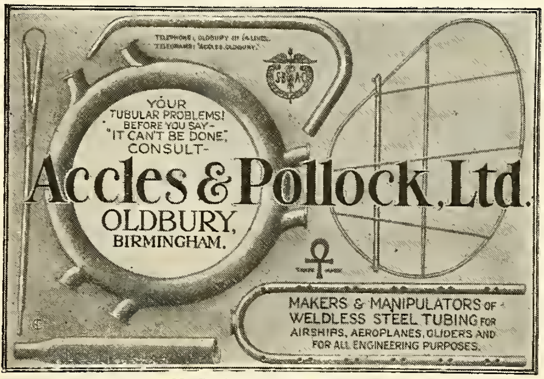

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26 x 4 wheels stream lined $10 or without streamline $8.50; 26 x 4 tire, dandy unused $7.50 or slightly used $5 or moderately used $3.50 or serviceable with slight repairs $1; new production tubes $2.25. 750 x 125 wheels $10; 750 x 125 dandy unused tires $10 or used passable tires $7.50; surplus tubes $1.75 or new production tubes $3.50; adapters for installing DH wheels on Jenny or Standard $7.50, 20 x 4 wheels $5; 20 x 4 tires slightly damaged $10; surplus tubes $1.75 or new production $2.75.

Canuck or JN4D safety belts $4.50; JN4D stabilizer braces $2 each. Dandy compass, vertical type, $15; dandy altimeter, small type $12.50 or large type $8.50; Johns-Manville tachometer $10; 120 lb. oil pressure gauges $2 each; 10 lb. air gauge $1.50; climb or banking indicator $2.50 or illuminated type $4.50; fore and aft inclinometer—a dandy—$8.50; air speed meters $15; air speed pitot head $3.50 or large Venturi $5; dandy thermometers with tubing $8.50.

OX5 crankshaft $25; camshaft $12.50 Extra flexible control cable for Jenny or Standard 8c ft.; thimbles 3c each; safety wire 95c per 100 ft; rib cord 1c yard or $3 per lb. Linen thread 35c spool; 10" double pointed needle 35c or 14" single pointed 50c; curved needle 35c.

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OUR TRANSOCEAN FLYERS RETURN

(Continued from page 128)

Commander Byrd and his companions would be unable to accept any additional invitations to attend civic celebrations because of the necessity for concentrated attention upon preparations for their trip to the South Pole.

THE TRANS-PACIFIC FLYERS

Lieutenants Lester J. Maitland and Albert Hegenberger, the Army San Francisco to Hawaii flyers, arrived at San Francisco on July 12th. They were greeted by the wildest enthusiasm. Seven green wreaths were dropped by a seaplane on their liner, the *Maui*, as it entered the harbor amid a bedlum of sirens and whistles. Each flyer wore one of the floral ornaments in the parade to the City Hall where they were officially received and presented with gold medals. They were then guests of honor at a Chamber of Commerce luncheon, following which they went to Oakland and were greeted officially at the city's auditorium.

After leaving the Pacific Coast, the army flyers journeyed eastward, flying to Milwaukee and to Chicago accompanied by a score of army planes. Milwaukee is Lieutenant Maitland's home town and the city closed up shop to do honor to him. While in that metropolis the flyers attended the dedication of a new field to be known as Maitland Airport.

At Dayton, Ohio, both lieutenants were presented with chests of silver by the people of the city, and attended a military ball given in their honor by the officers of Wilbur Wright Field. From Dayton the airmen flew to Washington to report to Secretary of War Davis. Assistant Secretary of War F. Trubee Davison, in charge of army aviation, a few minutes after their arrival at Bolling Field presented them with citations for the Distinguished Flying Cross which will be pinned upon their uniforms by President Coolidge upon his return from the Black Hills. The presentation was witnessed by Major General M. M. Patrick, Chief of the Army Air Corps, Major General Charles P. Summerall, Chief of Staff, Secretary of State Frank B. Kellogg, Secretary of the Navy Curtis D. Wilbur, General John J. Pershing and many of the Country's most distinguished soldiers and statesmen. An aerial circus was staged at Bolling Field by fellow army aviators. In the evening the flyers attended a dinner and reception in their honor.

SMITH-BRONTE HAWAIIAN FLIGHT

(Continued from page 131)

inaugurated in September of last year. During the war Smith was a flight instructor at March Field in California, and is recognized as a most capable and experienced pilot.

His plane, the *City of Oakland*, was a cabin plane used on the Pacific Air Transport route, which was sold to Smith and his associates and reconditioned, a new Wright Whirlwind J-5 motor being installed.

Emory Bronte, an ex-navy navigator, replaced Captain Charles Carter, who was Smith's navigator on his first and unsuccessful attempt to fly to Hawaii.

Captain William Royle, Reserve Corp aviator and Oakland commercial flyer, replaced Edmund Moffett as manager of the flight.

Anthony Parente was the chief backer of the flight.

The plane weighed 4732 pounds and carried 370 gallons of gasoline. The general specifications, performances and drawings of the Travel Air monoplane were published in the July issue of AERO DIGEST.

AIR—HOT AND OTHERWISE

(Continued from page 129)

Country of Mindanao in 1901 and 1902. In 1903 he was given a welcome change of air and temperature, being transferred to Vancouver Barracks, State of Washington, for almost a year between August, 1902, and June, 1903, but then came more years in the Philippines.

These were followed by a chance to do in the Army Service School at Fort Leavenworth some of the studying that most lads who yearn for military glory do in West Point. He was graduated from the Army School of the Line and shifted to the Army Signal School in 1906.

That also was the year when he went to Cuba with the Army of Pacification and served well with it, incidentally doing important mapping, being commended for his thoroughness, his skill and his invention of new methods. He went back to the Army Signal School, at Leavenworth, in 1907 and was graduated a year later, being immediately sent to Washington and assigned to aviation in which he had shown high intelligence. His graduating thesis at Leavenworth had actually been the first recorded military article to deal with "The Tactical and Strategical Value of Aerodynamical Flying Machines."

During his first year with Signal Corps Aviation he operated the first dirigible balloon purchased by the Government of the United States and the next year (1909) he was one of the first three officers of our Army detailed to operate the first military airplane purchased from the Wright Brothers in 1909. That same year he was the observer with Orville Wright on the first cross-country trip made by a flying machine in the United States. This journey broke world's records—three of them.

It was natural, therefore, that that year he should have been chosen as America's delegate to the International Congress of Aeronautics, held at Nancy, France, in September and October, 1909.

He took, under orders, the first airplane owned and operated by our Army to San Antonio, Texas, in 1910. Having had approximately ninety minutes actual instruction, he was told to teach himself to fly as soon as he arrived in Texas. This he did, with bells on, and for more than a year was the only officer on flying duty in the United States Army.

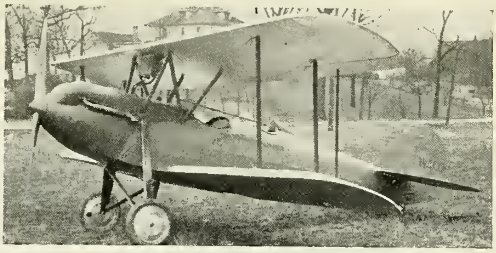
For fourteen months he operated the crudest airplane in existence, risking his life constantly in the most amazing smashups, but—teaching himself how to fly!

During this period he designed and used successfully the first set of wheels used on an airplane in this country, and, because the gracious Government had appropriated only $150 with which to keep the first plane in condition, he was compelled to spend out of his own pocket exactly twice that sum for this great purpose.

In 1911, while on aviation duty with the Maneuver Division, at San Antonio, he designed the first radio receiving set ever used in the United States Army on a service airplane, and in the same year broke the world's record for flight with a passenger. This was along the Rio Grande.

He is very familiar with our citizen soldiery, for during service in the Division of Militia Affairs he reorganized the Signal Corps and Engineer units of the Organized Militia throughout the United States, this work being in addition to his flying duties. In the spring of 1912 he successfully carried out numerous tests with airplane radio receiving sets, making 18 miles, the record at that time.

(Continued on page 236)



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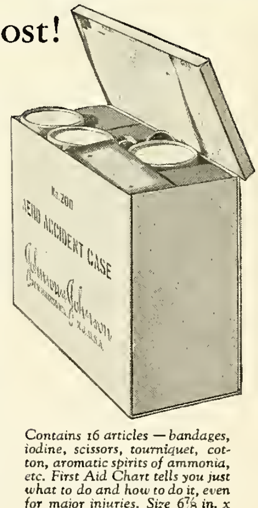

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(Continued from page 235)

Later he designed the first portable field machine truck used in the Army and this design formed the basis of the field machine shop trucks now in use by the Air Service, Signal Corps, and other military units.

He personally organized, equipped and trained the First Aero Squadron of the United States Army, which was its first complete military air unit. Later he designed the Army's first field tent hangar. This original design was used during the campaign in Mexico, in 1916, by the First Aero Squadron, and during the World War served for large numbers of canvas hangars for the housing of our planes and those of other nations of the Allies.

He planned and organized the First Aero Squadron with motor-trucks, in 1914, and it was the first combat unit of the Army to be equipped with motor vehicles exclusively.

His, also, was the design adopted for the semi-permanent hangars built at the Signal Corps Aviation School, in 1914. In 1915 he took command of the First Aero Squadron for duty with the Artillery School of Fire, at Fort Sill, Oklahoma and later carried out Artillery air observation, marking the first combined use of artillery and aviation by our Army.

November 19th, 1915, he did a real man's stunt. Under his supervision an Aero Squadron was for the first time moved wholly by air. Total distance, 550 miles; cost of total change to eight airplanes, fifty cents.

In the meantime he had been studying the effect of flight on human beings and requested the assignment of a surgeon to fly with the pilots and make a special medical study of flight mental and physical reactions. Result: salvation of many highly valuable lives and much costly equipment. Foulois made them find out when a man is in good shape for flight and when he isn't.

He personally did much reconnaissance flying over Mexico and in 1916 was captured and imprisoned in Chihuahua. He directed the compilation of the first manual of equipment for Aero Squadrons. He established Kelly Field, near San Antonio. He planned the existing chain of temporary air stations along the Mexican border.

In March, 1917, he was ordered to duty at Washington in the Aviation Section, Signal Corps, and upon the declaration of war against Germany was personally charged with drawing up the plans and organization of the Air Service for the great emergency. This plan was the basis of the $640,000,000 appropriation to develop a new industry, to construct training stations, shops, warehouses, etc., to recruit, organize and train 120,000 officers and men, to supply advanced training in the field, and finally to make operations with the troops effective.

From April to October, 1917, besides his other duties, which were plenty, he acted as chairman of the Joint Army and Navy Technical Aircraft Committee of the War and Navy Departments.

By October, 1917, it was decided that he must go to France to take charge of field work in locating and organizing training stations, depots, shops, warehouses, and airdromes in France, England and Italy and the training of all personnel over there. This gigantic and epochal work was magnificently done.

As a temporary brigadier general during the World War his service may be summarized thus: Chief of Air Service, A. E. F., Nov. 27, 1917, to May 29, 1918. Chief of Air Service, 1st Army, A. E. F., May 29, 1918, to July 25, 1918. Assistant Chief of Air Service, A. E. F., July 26, 1918, to June 26, 1919.

He was also chairman of the Joint Army and Navy Aircraft Committee, Paris, France, charged with supervision of purchases made in the United States; he was American member of the Inter-Allied Export Committee on Aviation, which was part of the Supreme War Council, from Feb. 21, 1918 to June 26, 1919, and held various other posts of great importance and associated nature.

His active service won him the Distinguished Service Medal, earned for him the commander's rank in the French Legion of Honor and caused his citation for Exceptionally Meritorious and Conspicuous Service with the Air Service of the A. E. F.

After the war he was placed in charge of the Liquidation Division, Air Service and reduced the claims against the Government by approximately ten million dollars. In April, 1920, he was made Assistant Military Attaché, The Hague, Holland, and Military Observer in Germany; after the signing of the Peace Treaty, relieved in Holland, he became Assistant Military Attaché at Berlin. Thus he served for four years, doing work normally regarded as that of the General Staff.

Returning to America on the expiration of his detail in Germany, in April, 1924, he was assigned to duty as a student at the Command and General Staff School, Fort Leavenworth, and remained there from August, 1924, till June, 1925, when he graduated and was assigned to duty at Mitchel Field, assuming command, August 8th, 1925.

Foulois has never had a press-agent. Nobody but himself knows all that he has done and there has been so much of it that he probably has forgotten much. We never have had an organizer more efficient or more modest.

So, Mr. President, Mr. Secretary of War and Mr. Assistant Secretary in Charge of Aeronautics, and all others interested, why not see to it that General "Jim" Fechet gets the kind of an assistant that can and will work with him—that really knows his stuff? From Washington, Conn., to Washington, D. C., is the right idea for Benjamin Foulois, the sort of public man, the sort of patriot, the sort of expert and the sort of competent executive who really achieves.

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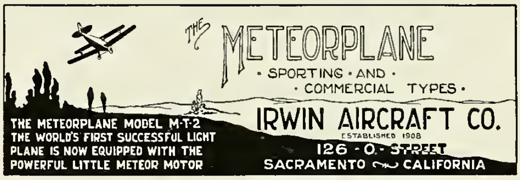

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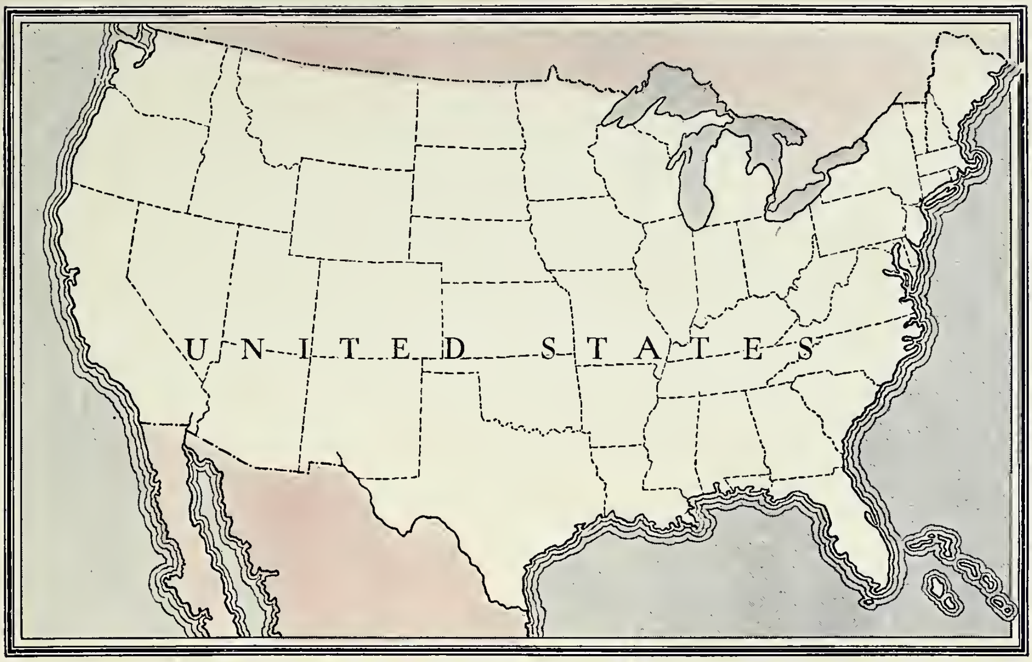

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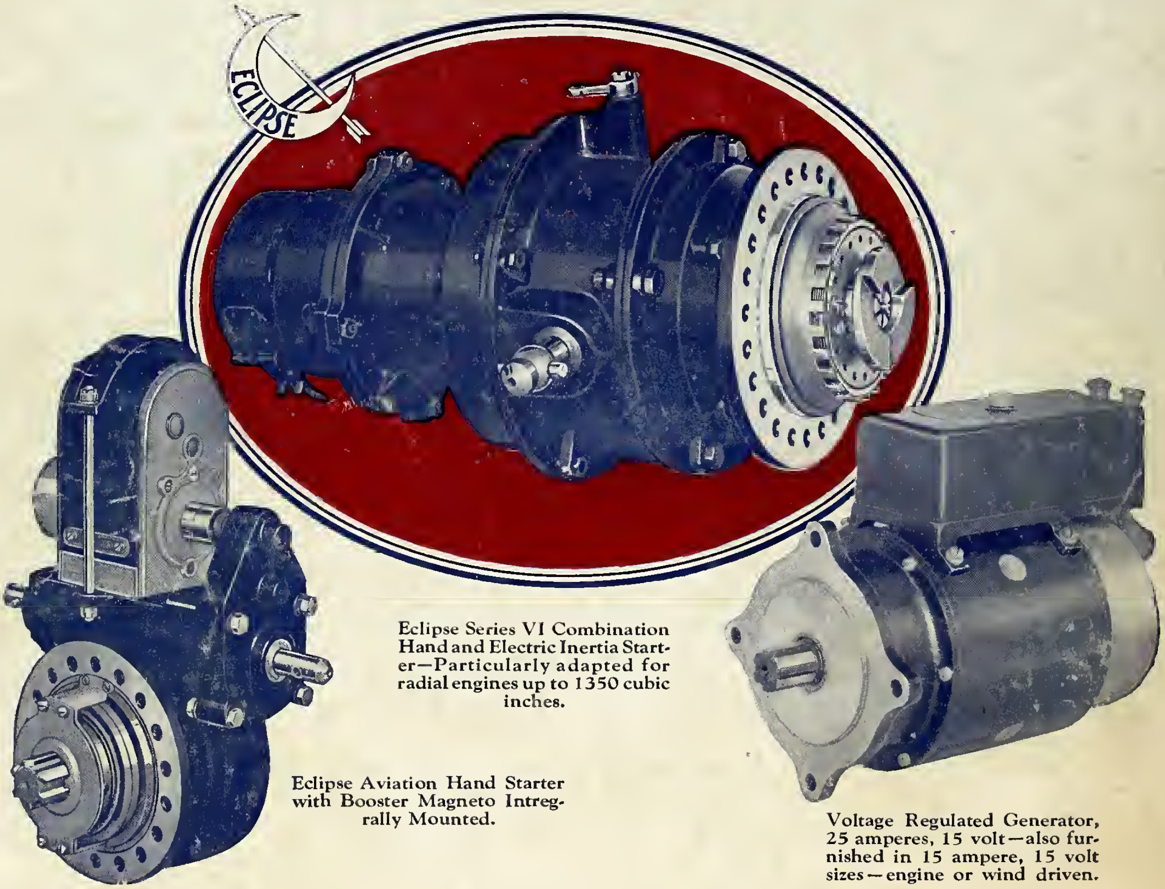

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